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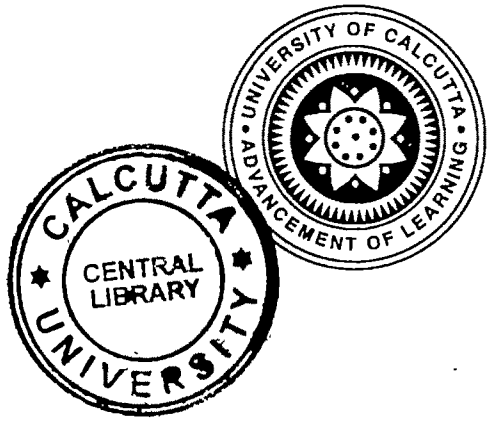

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EDITORIAL

Since the establishment of Department of Anthropology in 1920 a number a eminent anthropologists served as faculty members and as a result of accumulation of knowledge and expertise several emerging areas of research have been initiated. Some of emerging areas of multidisciplinary research are presented in the present issue.

The paper on beginning of food production in eastern India by Smita Bandyopadhyay, Nandini Bhattacharya and Prof. Ranjana Ray of Department Anthropology, Calcutta University emphasized on earliest evidence of food production from Ganga Valley during Holocene by hunter-gatherer communities.

In the paper by Dr. Syamalkanti Sengupta of Department of Anthropology, Calcutta University jointly with Sri Debasish Ghosh of Cultural Research Institute on folk cognition and choice of plants for use: an exposition on enthoscience for controlled preservation studied Santals knowledge of environment and their adaptation in the context of their regular use behaviour related to classified categories of their plant domain. It has been shown that though the Santals on the hill forest villages depend substantially on rice cultivation, they also have a wide range of dependence on the plant resources of their effective environment as well as forest for their survival.

The paper by Sri Subrata Sankar Bagchi of Department of Anthropology, Bangabasi College jointly with Sri Arnab Das faculty member of Department of Anthropology, University of Calcutta, on the question of urban poverty in a third world context observed that the concepts on poverty in general and urban poverty in particular are ordinarily overwhelmed by the observation of giving emphasis on technology and other economic aspects of development where the global scenario of astounding level of capital accumulation in the developed world on the one hand and siphoning off of resources from the Third World as well as marginalisation of population on the other, seems to get fade away.

Dr. Sekh Rahim Mondal of Centre for Himalayan Studies and Department of Anthropology, North Bengal University has studied Muslim society and culture in Bengali: tradition and change. The paper highlighted the traditional social organization of Muslims and the trends of change and also the interaction between the great tradition of Islam and the little traditions of the place in the framework of Muslim society and culture.

In the article 'Significance of bone rubble in forensic anthropology', by Prof. Surinder Nath, Department of Anthropology, Delhi University found that the bone fragments, especially the upper end is reasonably vital in providing a near accurate length of the concerned bone and that the bone fragments have a momentous application in the process of identification.

The paper by Sri Pinak Tarafdar, Research Student of Department of Anthropology, Calcutta University on a development program in the tribal villages, studied six exclusive tribal villages to understand the implementation of ICDS among the tribal groups.

In the paper by Prof. Manibrata Bhattacharya, Department of Anthropology, Calcutta University on the sequence of Acheulian Culture in West Bengal studied geochronology and morphometry of tools assemblages of plaeolithic industries in South Central part of upland Bengal. With regard to geophysical settings and geochronology, the paper suggest

that the Pleistocene deposits in the study area are mostly fluvial and aeolian, which are mostly found on the lower Gondowana formation, sandstone beds, etc. by the high-energy bed load fluvial forces, Although the sample sizes of the collected data from different places were not sufficiently large, morphometric analysis of five artifact assemblages in terms of different test of significance revealed of regional variation.

In another paper Dr. Syamalkanti Sengupta of Department of Anthropology, University of Calcutta jointly with Kanika Sengupta of Department of Anthropology, Sree Chaitanya College, Habra and and Sri Prasun Kanti Kar of Department of Anthropology, University of Calcutta, studied folk food cognition and choice: an exploratory exposition of empirical perception. In a multi-ethnic setting of "Purbi Singhbhum" the Santals, the Kharias and the caste groups were studied in order to gain access to their cognitive classifications of food(s) and edible materials. The classifications are seen to vary within and among the communities according to their perception of the cultural and environmental contexts.

Dr. Kanchan Roy of postgraduate department of Anthropology, Ranchi University jointly with Ratnawali, observed malnutrition among six endogamous groups comprising tribal and caste group school going girls of Ranchi on the basis of anthropometric variables. The paper revealed an overall good nutritional status and as well as variability of malnutrition in terms of stunting and wasting among the tribal and caste group school going girls.

Paper by Ajit K. Danda former Professor, Department of Sociology and Social Anthropology, North Bengal University demonstrates the dichotomy between tribal and non-tribal economy. The paper enlightened the area of the tribal economy as fast losing distinctiveness and identity, giving way to the institution economy and thereby transformation on the basis of increasing degree of specialization become conspicuous.

Dr. Arnab Ghosh, Palli Charcha Kendra, Visva-Bharati has provided the discourse of obesity as a genetic disorder. The paper raised an important issue in favour of developing of developing genetic tests for population screening in order to predict the level of risk for common polygenic form of obesity.

In the article 'Descending Divine Shakti : Changing Tradition of Durgapuja in West Bengal', Dr. Gopalkrishna Chakrabarti faculty member of Department of Anthropology, University of Calcutta distinguishes 'ritual' from 'festival and discuses the emergence of Durgapuja as the principal festival of West Bengal vis-à-vis- Kolkata in the context of Indian cultural history. While the ritual aspect of the puja has significantly declined in the recent years, a lot of dimensions have been created as new rituals to accommodate the emergent urban characters.

Another paper by Prof. Manibrata Bhattacharya, Department of Anthropology, Calcutta University on the tool assemblages of Palaeolithic from Totopara of Indo-Bhutan Border provides the understanding of distinct features of tool making techniques and morphometric characteristics similar to artifact assemblages from southwest upland of West Bengal due to different eco-zones.

The article published on nutritional status among semi-urban Bengalee boys by Sri Jyoti Ratan Ghosh and Dr. Arup Ratan Bandyopadhyay faculty member of Department of Anthropology, Calcutta University revealed a relationship of height, weight and increased age and BMI demonstrated accumulation of general adiposity in lower age. The study also

showed overall 6% prevalence of stunting and about 30% prevalence of thinness among the Bengalee boys.

Dr. Sumita Chaudhuri Research Scientist, Department of Anthropology, Calcutta University studied migration as an important factor in the process of urbanization in the paper Calcutta: A harbour Communities. Sumita Chaudhuri mainly used published data and census data between 1921 and 1991 to understand different kinds of migration streams, sex differences in migration streams, intra and inter country migration, over crowding and also caste specific and community specific concentration in different localities of Calcutta.

Dr. Aruna Bhattacharya and Dr. Gautam K. Kshatriya, Department of Anthropology, Delhi University has worked on the relationship of pulmonary tuberculosis (TB) patients of the slums of Delhi and concentration of hemoglobin (Hb) and some anthropomertric variables. The paper revealed lower values of Hb levels, skinfold measurements, circumference measurements and MBI in TB patients compared to that of the non-TB groups.

The paper by Dr. B. Bhattacharya of Department of Anthropology, Calcutta University entitled 'Some observation of urbanization in North East India' empharized on demographic aspect of North East India, specially on the issue of urbanization.

A. R. Bandyopadhyay

CONTENTS

BEGINNING OF FOOD PRODUCTION IN EASTERN INDIA

Smita Bandyopadhyaya, Nandini Bhattacharya and Ranjana Ray

Abstract : Neolithic culture is marked by domestication of plant and animal, grinding polishing technique and pottery. Earliest evidence of food production is coming from Ganga valley. The plateau, uplands and hilly flanks of the region are dotted with sites of Mesolithic culture during early Holocene period. These hunter-gatherer communities contributed largely to the development of Neolithic culture in Ganga valley, where as those groups who stayed in the hills and jungles of the uplands continued as hunting -gathering communities.

INTRODUCTION

Food production is a way of life, which involves the domestication of plants and animals. The shift from hunting gathering to food production took place through the altered relationship between man on the one hand and the world of plants and animals on the other. Compared to the hunting gathering way of life, which existed on earth for more than a million years from now, the food producing economy dates back to less than ten thousand years before present. In that short period of time the effect of the shift from food procurement to food production and the resultant control of food resources has profoundly influnced all aspects of human culture. The earliest food producing groups in the new and old worlds did not always have a more reliable or stable or nutritious subsistence base than did their predecessors, and they may often have been worse off (Flannery, 1969 : 86). When man became a food producer, the difference was that he was drawing plant and animal species further into his orbit and establishing a closer symbiotic relationship through the process usually called domestication. Domesticated plants are forever tied to man; having lost their power of dispersal and reproduction (Helback, 1970: 194-195).

Neolithic is a sub division of the Stone Age and was originally defined on a purely technological basis (Avebury, 1865). It implied that during this period the tools of man was still made of stone but unlike those of his predecessors, these stone tools were ground or polished (Burkitt, 1926). This simple definition has long since been given up. It now means a cultural or economic stage, where man had learnt not only to smoothen his stone tools by different methods, but above all he had begun to produce his own food (Childe,1955). Definition provided by Braidwood and (1960) suggests of a reasonably efficient level of food production. This is a situation in which firstly, food through direct production amounts to approximately half of the communities dietary needs for at least part of the year and secondly, both the plant and the animal domesticates are no longer strictly bound to their natural wild biome and habitat. It is often difficult and rather artificial to differentiate between hunter-gatherer and food producers. According to Bender's (1975:2) definition it is the point at which the environment has been so modified, by forest clearance, etc., that the hunter-gatherer way of life is no longer viable, or when the population has increased to such an extent that it can no longer be sustained by a hunter-gatherer economy. As far as the situation in India goes the last definition may be appropriate for giving rise to Neolithic culture.

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The evidences suggest that generally semiarid regions belonging to temperate to tropical latitudes with adequate but not over abundant collectible food resources were probably the centre of the most important beginnings of cultivation and domestication. Pre existing sedentism is prerequisite for the appearance of food production. A region with a natural environment which included a variety of wild plants and animals, both possible and ready for domestication, would be a probable nuclear area (Bhattacharya,1996). The nuclear area, which was the scene of the earliest experiment in effective food production, was in southwestern Asia. At present with work in southeast Asia specially in China and Thailand (Whyte, 1985), it appears that some where along the marginal zone of south China and northern Thailand nuclear area for rice cultivation existed around c. 8 kyrs. B.P. Situation in India is somewhat different as far as rice and some of the pulses are concerned.

Incipient farming as conceived by Braidwood (1960) came into existence among a reasonably sedentary group of people depending on the ecological potentiality of the regions of adaptation. Bhattacharya (1996: 136) pointed out that as far as majority of Neolithic evidences from this sub-continent go it is the economy that transformed the technology. Archaeologically speaking, ground celts, potsherds or permanent dwelling structures, either individually or together, whenever found are taken to indicate a Neolithic culture.

EASTERN INDIA

The area under study is bounded by Bhutan, Sikkim and Nepal on the north, by Rajasthan and Madhya Pradesh on the west by parts of Andhra Pradesh and Bay of Bengal on the south and Bangladesh on the east- The area is drained by several rivers, of which the Ganges, Subarnarekha and Mahanadi are important.

For the study of Neolithic in Eastern India some of the important excavated sites are taken into consideration. Large numbers of Neolithic celts have been recorded from almost all the five States that comprise this zone. They are mainly Eastern Utter Pradesh, Bihar, Jharkhand, West Bengal and Orissa. Assam region is not considered here. Firstly, because of its individualistic character; secondly, the region belongs to the NorthEastern part, separated from the rest of the eastern India by Gangetic basin, the latter being largely devoid of Neolithic element. The whole of eastern India represents Neolithic which are characterized by ground axes, microliths and pottery.

Most of the tools of the eastern Neolithic Culture are found from the surface but some are from the excavated sites. Ground tools of stone, bone and pottery are very small in quantities but are the characteristics of the Neolithic Culture of this region. Evidences of early food production in eastern India are available from sites of Kuchai, Golabai Sason, Dugni, Barudih, Sanjay Valley, Chirand, Koldihawa, Mahagara etc. Essentially this area consists of Archaean rocks (Chanokite, Dharwarian and Khondalite) followed by granites, Cuddapah, Vindhyan, Gondwana and trap. The Oligocene- Miocene deposits are found in sporadic patches. Tertiary deposits are sometimes found in the coastal tracts. Eastern and part of southern region of this area are covered by Pleistocene and recent deposits.

MESOLITHIC CULTURE IN EASTERN INDIA

For any study on the beginning of food production an understanding of the Mesolithic culture is essential. Agriculture does not begin everywhere at the same time. Mesolithic period also

expands or shrinks in a country depending on how late or early agriculture begins. In India, microliths occur from the earliest period of Holocene and continue to occur almost with Iron Age. One of the general views held for the evolution of microiiths is that the cultures adapted to large mammal hunting was replaced by fishing fowling and species specific nature of hunting and collecting. Wild cereals must have been collected in available and suitable exposed patches within the decreasing forest cover. A group probably came out from the large band and settled down and formed Neolithic villages. In order to understand these purely pre-agricultural stages of culture, it will be important to look at the Mesolithic sites discovered till date.

A number of sites were discovered in Eastern India, mainly in the districts of Ranchi, Singhbhum, Burdwan, Bankura, Medinipur, Keonjhar and Dhenkanal in the late nineteenth and twentieth centuries by various scholars (Ray, 1954; Lal, 1958; Mahapatra, 1962; Ray. Basu and Kundu, 1993). Ray and Ghosh (1990) made a synthesis of the Mesolithic cultural remains found from Eastern India. Following is the description of some the important Mesolithic sites, which are relevant for understanding the origin of Neolithic culture in the area.

Birbhanpur:

The industrial complex found at this site is a mixed one of both macro and micro in proportion, although microliths dominated. The microlithic industry is regarded as non-geometric because trapeze and triangle are absent in the collection The assemblage includes irregular, free-flaked cores, blades, lunates, points, borers, scrapers and burins. Raw material is mostly milky quartz, though occasionally crystals, chert, chalcedony, quartzite and fossil wood were used. Geological evidences indicate that at the start of Holocene a wet phase prevailed and dense forest existed in the region. This mild climatic phase was followed by a period of increasing aridity and violent wind activity, so that the habitation layers were covered with wind blown sand. At Birbhanpur the microliths claim a fairly good antiquity. The exact age in years is difficult to guess but may be placed between 10,000—4000 B.C. (Lal, 1958).

Kuchai:

This is a microlithic site in Orissa. Thapar excavated the site. Most of microliths at Kuchai are fairly large in size and are mostly prepared on black cherty material and sometimes on fossil wood Geometric forms are either absent or rare in most of the cases. Typology constitutes of blades, lunates, points, burins and scrapers. Side and end scraper are often made on fluted cores and flakes. Interesting feature about the site is that Mesolithic and Neolithic cultural materials are found in a stratigraphic sequence. The former is found at a lower level and the latter with pottery and ground stone tools at upper levels.

Adamgarh:

Adamgarh is an important site in the central highlands located near Hoshangabad, 30 km south of Bhimbetka. Joshi and Khare studied this site (Joshi and Khare 1966). The site consists of a number of rock shelters. From these rock shelters and immediately outside some of the shelters, nearly 18 trenches were dug. Microliths have been

uncovered in almost all of them within a depth of first 100 cm. The top most layer up to 20-60 cm is usually sterile and constitutes of rock debris and loose earth. Lower most layers below the Microliths bearing layers yielded Palaeoiiths. The microlithic industry is geometric in nature. Microliths are constantly associated with rich animal remains. At least 14 different animal species have been identified of which dog, buffalo, sheep/goat and pig are identified as domesticated varieties. Wild animals were represented by Monitor lizard (*Varamis ghisius*), Porcupine, Horse, Spotted Deer, Sambhar (*Cervus unicolour*) and Hare. Dating is based on uncharred bones and shells. Both are prone to contamination and dates are therefore unsatisfactory in nature. The presence of domesticated animals, therefore, makes it obvious that despite the lack of polished stone tools; Adamgarh microlithic industry probably represented an early Neolithic stage. However, no plant remains have been identified.

Sarai-Nahar-Rai:

In Ganga valley Sarai Nahar Rai is the only excavated Mesolithic site. It is located near Allahabad in Pratapgarh area (Sharma, 1973:129; Datta *et.al.*, 1971). The site overlooks a lake, which now is dry. The settlement covers an area of 2000 esq. The Mesolithic people at this site lived in hut with floor of about 5x4m., which was made of rammed, burnt clay lumps. Four post-holes on the four corners, suggested a roof. Several hearths along with charred bones were found on this floor, indicating some sort of communal cooking. Bones represented Sheep, Buffalo, Cattle, Goat, Elephant and Tortoise. Some of these animals appeared to be of domesticated kind. Thirteen burials were found with extended inhumations, the head pointing west. Except for microliths, which might have come with earth filling, no grave goods were discovered. In one case, a rib was pierced by microliths. The hearths and the associated food debris indicated that burials were made inside the habitation. Microliths were made from chert (60%) and chalcedony (40%). Because of the presence of geometric forms typologicaily the industry may indicate a late date. Two dates were found for the site. They were c. 10,000 years and 1000 years B. P. The former date was based on uncharred bones exposed to the elements and thus was more vulnerable to contamination. The latter was on charred bones and therefore, more reliable. The presence of domesticated animals and diminutive geometric microliths conform to c. 1000 B.C. date.

Mahadaha:

It is a well-worked Mesolithic site. Mahadaha provides a continuous evidence for the evolution of Mesolithic culture in Ganga valley. There was a contemporary and parallel change in the river Ganga. Terraces of the river yielded remains of human activities from the Epipalaeolithic to advanced Mesolithic (Sharma, 1985: 369). Chakrabarti (2001: 257) is of the opinion that location these Mesolithic sites in the Ganga valley indicated their significance in the later cultural development. The excavation had yielded a large number of wild cattle and sheep/ goat bones from the 9th and 8th millennium Mesolithic levels at Mahadaha.

Transitional Nature of Mesolithic Culture:

The Mesolithic culture appeared to have evolved in the hill and plateau area of Eastern India. Although true blade and burin industry of upper Palaeolithic is not conspicuous

in the region but there is ample evidence to suggest the development of Mesolithic culture from preceding Palaeolithic culture (Ray,1985). Early Mesolithic culture well represented at Birbhanpur is of nongeometric in nature with macro element somewhat more in proportion. Later Mesolithic culture showed increase in geometric type and size diminution. The culture at this phase went through a diversified development. Ecological niche formation is prominent (Ray, 1985). Mesolithic cultures in the hills and plateaue though imbibed some Neolithic traits but in these areas hunting gathering way of life prevailed. Those industries found in the Ganga valley went through a change into sedentary life style. Some of the features like sedentary life style, beginning of domestication of animals point out the transitional nature of the subsistence system. The use of basalt in the advanced Mesolithic of Chopani Mando is significant. It played a connecting link between Neolithic and Mesolithic culture.

NEOLITHIC CULTURE OF EASTERN INDIA:

Most of the tools of the Eastern Neolithic Culture are found from the surface but some are even from the excavated sites. Ground tools of stone, bone and pottery in very small quantities are characteristics of the Neolithic culture of this region. Eastern Indian Neolithic complex may be grouped under two heads (1) Assam culture complex and (2) Bihar, Bengal, Orissa complex. In the present study the Assam region is not taken into consideration. The first Neolithic ground or polished stone implement was found in 1842 (Allchin and Allchin, 1990). Without the discovery of food grains full-fledged Neolithic stage could not be assumed by scholars earlier. Worman and later V.D. Krishnaswami (1960) made an attempt to bring out the Neolithic pattern of India. On the basis of available data of the time he divided India into four Neolithic provinces, viz., (a), (b), (c) and (d). The division had been revised in recent times (Agrawal, 1982). Following is short description of some of the relevant Neolithic sites from eastern India.

Pandu Rajar Dhibi (West Bengal):

Pandu Rajar Dhibi seems to be one of the largest settlements of Chalcolithic culture. Excavations of 1966 have revealed a sequence of four cultures, A few microliths were found in Period I. Ovens were found on the floor of period I. In this period, besides the hand-made, drab or thick grey ware, showing impressions of paddy husk, were found. It was identified by Shri A.K. Pal, Economic Botanist to the West Bengal Government, as those of cultivated paddy *Oryza saliva* L. (Graminal) (Dasgupta, 1964: 14).

Golabai Sasan (Orissa):

The site is on the left bank of Mandakani in Puri district of Orissa. Archaeological Survey of India excavated the site in 1991-92. Seven trenches were dug and three cultural successions were reconstructed. These were Neolithic, Chalcolithic. Axes, adzes, chisels and querns were the stone tools found from Neolithic depositds. Grinding and polishing was the tool making technique. One shouldered celt was found. Semi mineralized bones and antlers were also used to make tools. Other tool types identified were point, burin, chisel, adze, needles, arrowhead and harpoon. Hand made pottery fragments had also been recorded from this phase. The animals that were identified

from the bones were Sheep, Goat, Humped Cattle and Stag. Date for the Neolithic phase is within c. 1600 B.C. (Bhattacharya, 1996: 145).

Kuchai (Orissa):

Excavation at Kuchai, district Mayurbhanj in Orissa is important in the sense that it provided evidence for the development of Neolithic culture directly from a Mesolithic base. Neolithic cultural assemblage consist of a coarse grit tempered red ware, sometimes slipped and showing incised finger tip decoration. Pottery is in association with polished stone implements. These were rounded butt axe, faceted hoes, chisels, pounders and fragmentary examples of mace head and grinding stone. No shouldered hoe was found from the excavation although it has been reported from the area as a surface collection.

Sanjay Valley (Jharkhand):

There are many Neolithic sites in Sanjay valley, a tributary of Subarnarekha, located in Singhbhum district, Jharkhand. Barudih and Dugni are the two important excavated sites. The Sanjay valley clearly has the archaeological potential to contribute to knowledge of early rice cultivation, one of the major economic developments in human prehistory, and one reliably dated to at least 5000 B.C. In the geological sections, exposed on the Sona nalla, a tributary of Sanjay, the reddish brown soil, which overlies a thin deposit of unconsolidated gravels, yielded Neolithic assemblages. These consist of large quantities of potsherds and celts. Generally plain potsherds, both hand made and wheel made, were found. A few whole pots had also been recovered. Red, brown and black potsherds occurred in all the levels, mostly associated with charcoal and less often with burnt clay. The dominant tool family was that of the celt. Smoothed celts with traces of chipping were most frequent. Other stone tools included a number of pounders, hammer stones, fabricators, ring stones and saddle querns. Considerable quantities of carbonized rice grains (dark coloured) mixed with clay and potsherds had been found in course of digging in trench no 1 about 1' to 3' below the datum line. Though carbonized, these grains were not decomposed and their shape and form were welt preserved. The species is a cultivated variety and it has since been identified as *Oryza sativa* (Linn) by the Rice Research Institute at Cuttack. The prennial type of Asian race of *Oryza perennis* may be originator of the cultivated rice *Oryza sativa* (Chatterjee, Ray and Ghoshl978; Ghosh *et al*, 1984: 24-28). From the state of preservation the rice grains in the mound at Barudih appear to be rather late. There is no evidence of animal domestication (Sen, 1969: 17-28). At Barudih C14 date is found to be around 1000 B. C.

Chirand (Bihar):

Unlike other Neolithic cultures of Eastern India, the settlement of Chirand is situated in the alluvial plain over reddish silt. Deposit of Neolithic culture comes from the earliest level and was 3.5m thick and rested under thick debris of an early historic settlement. The structures discovered were circular and about 2m in diameter. There lay close to one another. Their floors were paved and the walls were made of clay and mud plastered over bamboo screen from outside and inside. The roofs were presumably conical and

thatched. The inhabitants of Chirand used pots and pans. There were four main types, red pale, deep gray, black and black and red. Both hand and wheel made pots were found. In India, Chirand is the only Neolithic site where different types of bone tools were found, These included picks and chisels with broad and narrow end, hammer and dagger, bracelet, shaft straighter, side and end scrapers, needle, bodkin, awl and drill. There were also arrowheads, both tanged and socketed. Stone was not available in large quantity, so people utilized long bones and antler of animals they hunted and butchered. Microliths, made on chert, chalcedony and silicious stones continued from earlier Mesolithic stage. A large number of ground stone artifacts including hammer stones and rubberstones were recovered. The only effective weapons of offense were bows and arrows tipped with stone and bone points and terracotta sling balls. For cutting vegetables (wild) and stalks of wild grasses, they used microliths set in bone, wood or clay hafts. It seems that the people of Neolithic culture at Chirand were acquainted with sort of cultivation of grain because among the debris occur charred grains of paddy husk, wheat, mung and massoor This indicated that the Neolithic people of Chirand had an idea about raising summer and winter crops separately. There were large quantities of bones of fish, bird, tortoise, cattle, deer, shells of snail and other molluscs, and carbonized seeds of berries. In a way these discoveries demonstrably speak that the society had solved the subsistence problem by raising cereals, hunting games and collecting fruits and nuts (Narain, 1979; 306). Elephant, rhino, buffalo, ox, stag and deer remains were also found. Neolithic occupation at the site dates around 2000 B.C. (Bhattacharya, 1996: 141).

Belan and Ganga Valleys (Uttar Pradesh):

Chopani-Mando, Koldiwa and Mahagara are the excavated Neolithic sites on the Belan river. Mahadaha, another Neolithic site is on Ganga Valley. The record as a whole is closely integrated with the environmental history of the Vindhyas and the Ganga Valley. After the end of the Pleistocene there was a sharp change in the regimes of the Vindhyan river. and the Belan started to deepen its channel and build its most recent terrace. This terrace contains the remains of human activities from Mesolithic to Neolithic. The artifacts excavated from Chopani- Mando in the Belan Valley and from Mesolithic sites in the Ganga valley, specially Sarai–Nahar Rai and Mahdaha, provide an uninterrupted evidence of cultural evolution. Radiocarbon dates provided a chronological framework for the cultural development. They are as follows. Pre Neolithic 8080 ±115 B.C ; early Neolithic 6570±210 B.C. and 5440±240 B.C. The excavation in the area gave information on environmental and cultural changes, and the beginnings of semi-sedimentary life as revealed by animal and plant domestication and an increase in numbers of sites and population size. The prolific use of rice husks and chaff as pottery tempers and the discovery of rice grains, all of domesticated varieties, establish conclusively the cultivation of rice from the earliest levels of Neolithic. Wild rice was also known and used in the area in the advanced Neolithic stage, and this evidence is significant since it extend back the history of exploitation of this major cereal (Sharma, 1985 : 369-370).

CONCLUSION

It appears from the above discussion that sites of Mesolithic were found mainly on the hills and hilly flanks of central highland and on the undulating stretch of eastern plateau. Although clusters of further Mesolithic sites are found in the Ganga valley and tributary valleys of the Ganga system, they remained closer to the hilly regions. The microlithic culture along the hilly flanks and nearby river valleys continued for sometimes. In the river valleys along the alluvial plains the features of permanent settlement and species specific hunting gathering emerged. These features were evident in the remains of the food and hearth debris, burial and its complexes. Such evidence was found at Sarai-Nahar-Rai and Mahadaha. Similar evidences were found along the Sanjai river valley.

In Eastern Indian context, the evidence of early food production was found from various sites. The evidence for domestication of rice, in view of the radiocarbon dates for the early Neolithic levels of Koldhiwa (8080±115 B.C.) is to date the earliest in India. The Sanjay Valley clearly has the archaeological potential to contribute to the knowledge of early rice cultivation. Along with rice, the evidence of wheat, moong and massoor appeared to be significant feature about early Neolithic settlements of Chirand (2000 B.C.), Barudih (810±55 B.C.), Pandu-Rajar Dhibi (1380±105 B.C.), Kuchai and Golabai Sasan (1600 B.C.). The recent terrace of Belan and Ganga valley revealed cultural remains in sequential order from Mesolithic to Neolithic cultural stages. This transformation was achieved in a small compact area and appears to have been an indigenous development. The Mesolithic occupations of the area showed clearly a hunting emphasis which may have also sometimes maintained suitable number of semi domesticated animals and pottery. Mesolithic industries, which flourished at high land area were the predecessors and contributors to the development of Neolithic culture in the area. More precisely the idea may have developed in the highlands but the culture of food production emerged in its full form in the alluvial plains of river valleys in the region. In Eastern India the Jeypur tract of Orissa has long been identified as a place where the ancestral wild varieties of, *Oryza sativa* are growing. The hilly flanks of central highlands and its extension into the eastern plateau might had served as the places were the incipient mode of food production emerged but the full-fledged Neolithic culture developed in the nearby alluvial plains.

The contribution of Mesolithic hunter and gatherers were immense to the development of food production in Eastern India. The model (fig. 1) explains the situation in eastern India. Mesolithic culture emerged with the end of Pleistocene and the beginning of Holocene. Development of this culture was diverse through time and space. With the changed environmental condition in the alluvial plains people took to sedentary way of life, domesticated plant and animal and changed to Neolithic culture system. In the hills they continued in the same life style as they did as Mesolithic hunter and gatherer. Therefore the base of the triangle represented the cultural base as Mesolithic element but the development at different areas had a varied scenario as represented by the two arms of the triangle, rising to the peak contemporaneously. This sort of diversity is a unique feature in India.

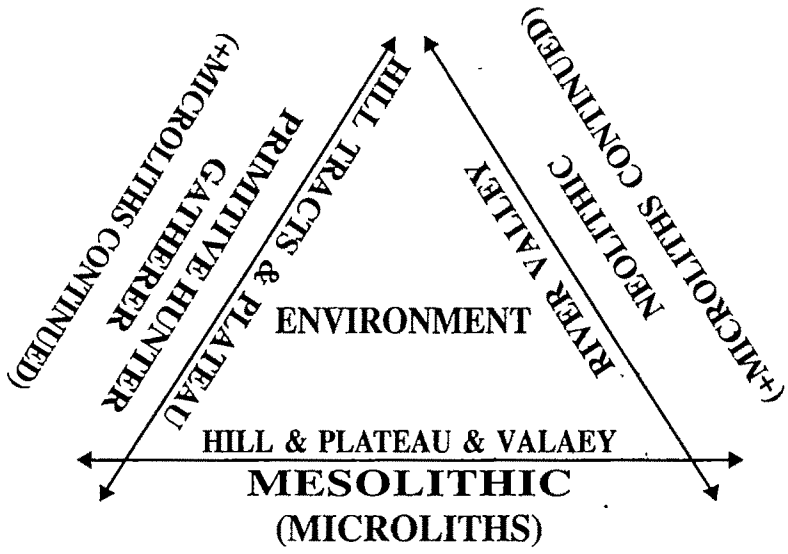

Fig.—1

MICROLITHS, CULTURAL DEVELOPMENT AND ENVIRONMENTAL PERSPECTIVE IN EASTERN INDIA

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FOLK COGNITION AND CHOICE OF PLANTS FOR USE: AN EXPOSITION ON ETHNOSCIENCE FOR CONTROLLED PRESERVATION

Syamalkanti Sengupta[1] and Debasish Ghosh[2]

Abstract : The description of the Santal's knowledge of environment, their adaptation in the context of their regular use behaviour related to classified categories of their plant domain have been explored. It has been shown that though the Santal on the hill forest villages depend substantially on rice cultivation, they also have a wide range of dependence on the plant resources of their effective environment as well as forest for their survival. This dependency is culturally, socially and morally integrated resulting in continuous and controlled preservation which is very significant for development.

The Santal are recognised as scheduled tribe in the states of Jharkhand, Bihar, Orissa and West Bengal. Medinipur is the largest district in the state of West Bengal. Also it is the most populated district in the state. Scheduled tribe population comprises of 8.28 per cent of the total population of the district (Census 1991). The eastern portion of the Chotonagpur plateau has entered in the north and north-west parts of the district, the area of which is undulated, wavy and full of hills and forests. In the Jhargram sub-division of the district there are dense forests. The S. T. population comprises of 23.91 per cent of the population of Jhargram sub-division.

Earlier workers already stated that the Santal in Jhargram area are mainly agriculturist folk whose income is also supplemented by gathering firewood, day labours, serviceing etc. Occasional hunting and fishing are done as supplementary means of earning. So they are exposed to the varied domains of environment. The constituents of this environment which they utilize effectively as resource for living. i.e. realized niche is conceptualized as *Buru* (hill), *Bir* (jungle), *Gendre* (river), *Hasa* (soil). The realized ecological niche means the domain of environment which is effectively utilized in various ways (Hutchinson 1965). The boundary of the environment which is not visible and as such not utilitarian and comes under the cognition of the Santal from the wisdom of their forerunners and which is referred by them as *Disham* that is, the **fundamental niche** (Sengupta 2003). In this discourse attempts have been made to probe how the people like the Santal relate the classified categories of plant domain to their regular use behaviour.

The data were culled from the key informants of both the sexes using eliciting techniques from four exclusively Santal inhabited village of Jhargram sub-division namely Kalaboni, Chechergaria, Pialgarih and Jambani.

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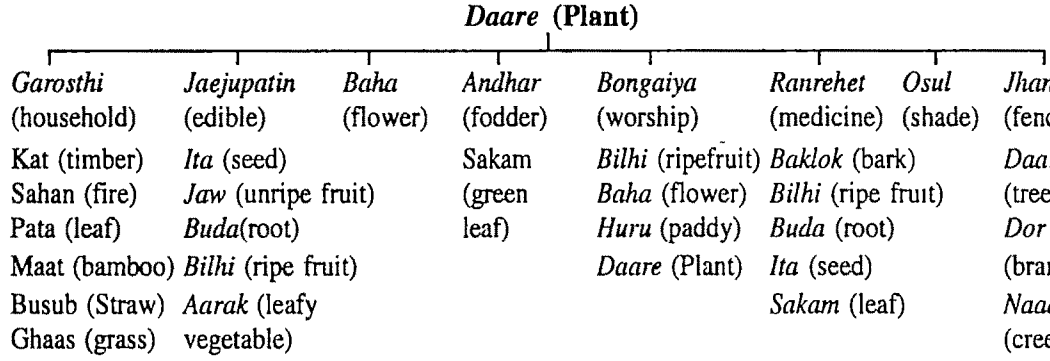

Fig.-1 Use of plant and its parts.

Using systematic question frames it was found that plant parts were used for different purposes. Pattern of use of different categories of plants shows a mixed hierarchic character (Fig.-1). The upper level is divided according to purpose; the parts and products separate the lower level. The parts products of the plants are used that result in their separate names.

JAEJUPATIN (EDIBLE) :

The category named as jaejupatin includes edible plants. When the entire plant is taken as food it is called by them as *Aarak* means leafy vegetables which include plants like *Mungoh, Loitta, Linjra* etc. Some parts like *Ita* (seed), *bilhi* (ripe fruit), *buda* (root), *Jaw* (unripe fruit) are taken also as food. Some of these plants are cultivated in the *Budgay* (kitchen garden) in different seasons. The flowers of *Bilhi Daare* (fruit bearing trees) are not destroyed untill they bear fruits.

The people, in course of use, can identify and name different *Sibil* (tastes) of edible items. In practice they express the taste of any item adding the suffix *Sibil* to the name of that item. First level of distinction is made from whether taken as *Utu* (cooked) or *Berelgiyai* (uncooked). i.e.-fruits, vegetables etc. Among the uncooked items next level of differentiation made by them as *Hedem* (sweet), *Jojo* (sour), *Harad* (hot), *Hewed* (bitter), *Kaasha* (tannic taste) and Kharrah (salty). Though the *Huru* (paddy) becomes edible after cooking yet they call it as *Huru bilhi* because they harvest it after ripening.

In case of *Utu* (cooked) items they refer each one with prefix of item name. e.g. *Hakujil Utu* (fish curry), *Merom jil Utu* (meat curry), *Bhedwa Utu* (curry of ladies finger), *Daka Utu* (boiled rice) etc. When paddy is cooked as rice they call it *daka Utu.*

The taste of rice is termed as *Daka sibil.* Rice is also taken by them in the form of *Hanria* (rice beer), the taste is referred by them as *Daka utu-siah sibil-kanah* (fermented cooked rice taste). Besides the level of cultivable Lands, retention of fertility of land and the choice of particular paddy variety in high frequency are further taken from their preference of taste and food habit. Using the question on value frames it emerged that these people do take stale rice in the morning and again take boiled rice in the evening after returning from their daily activities. The paddy cultivated in *Danga* (high) land is *Danga huru. It is Mota* (coarse) in variety, reddish in colour and preferred for daily use as it takes long time to be digested and therefore they do not have feeling of hunger for long period of work time. For the reason they do not take rice made of finer varieties of paddy though they taste better than earlier one. These are kept for entertaining guests and meet the need of festivals. If they have surplus quantity they sell it to others or in market in their need. Their choice and rotation of crop

is shown in Table-1. The table shows that their choice of crop is a balance between their annual requirement of rice and their preference of traditional variety for their daily food habit. Their perception about maintaining the fertility of the soil of different types of land according to types of crop is also evident from the table. The new variety of paddy requires chemical fertilizers for better yield. If they choose new variety for consecutive two to three years and use fertilizers, which according to them hardens the furrowing layer of lands and becomes difficult for them to plough manually in third or fourth year. So they use *Gudi* (cowdung) *Khat* (manure) in the next year which helps to preserve fertility, loosen the upper layer of land and ploughing becomes easy. Accordingly

TABLE : 1 ROTATION OF CROPS AND MARKETABLITY

Land Type	paddy variety	Type of Seed	Procured From	Yield per Bigha (in Ara)	Sale Price / Quintol
Dahi	Aush	T	H	2.0-2.5	
	Gundulu	T	H	1.0-1.5	
	Kakri	T	H	1.0-1.5	
	Bhutmuri	T	H	1.0.1.5	
	Goradhan	T	H	2.0-2.5	Rs. 300-350
Danga	Kaichi	T	H	1.0-1.5	Rs. 350-400
	Nohchi	T	H	2.0-2.5	Rs. 350-400
	Lalat	G	M (Rs.700-800)/Q	6.0-7.0	Rs. 450-500
Matiar Danga	Swarna	G	M (Rs.700-800)/Q	Do	Rs. 350-400
	Lalswarna	G	M (Rs.700-800)/Q	Do	Rs. 350-400
	Pankaj	G	M (Rs.700-800)/Q	Do	Do
Sol	Aiya 36	G	M (Rs.1000-1100)/Q	8.0-9.0	Rs. 500-600
	1006	G	M (Rs.1000-1100)/Q	Do	Do
	1007	G	M (Rs.1000-1100)/Q	Do	Do
Next Year					
Dahi	Kaltur	G	M (Rs.700-800)/Q	6.0-7.0	Rs.350-400
Danga	Sajormoni	T	H	2.5-3.0	Rs. 350-400
	Belmuji	T	H		
M. Danga	Jhuli	T	H	2.5-3.0	Rs. 350-400
	Deputysal	T	H	2.5-3.0	Do
Sol	Janglijata	T	H	3.0-3.5	Rs. 500-600
	Kabirajsal	T	H	Do	Do
	Sitasal	T	H	Do	Do
	Banspati	T	H	Do	Do

G = New variety; T= Traditional; M= Market; H=Household; !=Quintol;

1Ara =128Kilogram. 0.42 Decimal= 1 Bigha.

SAJAO (DECORATIVE) :

The next category includes some trees whose flowers are used for decoration. These are also used at the time of marriage and worship. e.g.-*Kiya, Gulachi, Mali.*

***ADHAR* (ANIMAL FODDER):**

Plants are also used as animal fodder either as green fodder or dry fodder. Dry fodder includes *Busub* (straw) and green fodder includes different types of *Ghass* (grass), *Aarak* (leafy vegetable), *Sakam* (leaves) of big Trees etc.

***BONGAIYA* (RELIGIOUS) :**

For religious purpose plants like *Bade* (banian), *Koram, Rot, Sarjom. Matkom, Tulsi* etc. are considered as sacred and worshipped by them and also plant parts like fruits of *Uul, Kund, Modal,* flowers of *Mali, Gulachi, Sarjom* and paddy variety *like Majhi, Malta* are used for religious, marriage and birth ceremonies. The trees or plants which are used in the ritual life are as follows : (1) In every worship, either in *Jahar* or in the house the deities are offered *Hanria* (rice beer) on *Phuruk* (leaf cups) made from *Sarjom* trees; (2) On the occasion of marriage of a Santal family, it is their custom to place the branches of *Sarjom, Matkom, Karam* trees in the centre of *Pinda* (altar) they build in *the Rucha (courtyard)),* and when a bride comes to a groom's house she has to stand on the leaf plate made from *Sarjom* tree on washing her feet; (3) When a child is born, the *Dhai* (midwife) places the newborn baby upon a leaf of *Atnak* tree and presents it to mother herself; (4) When a person dies in a Santal family, a branch of *Matkom* tree is planted at the place of funeral or burial and at the time of *Chotokaman* (death ritual on tenth day) they offer *Pindo* (rice mond) in the *Sarjom* leaves and left it to river. On the day of final funerary ceremony, holy water is sprinkled with the help of *Souri* grass on the relatives and assembled villagers in the deceased person's house. In the same evening consanguinal kinsmen of the same clan sit in a row and take cooked rice on the leaves *of Karam* or *Sarjom* tree.

***OSUL* (SHADES) AND *HAYEH* (WIND) :**

The people can realize the importance of big trees. In destroying or cutting trees a communal feeling is observed. Usually the villagers do not cut the trees of their village for getting *Sahan* (firewood) or *Kat* instead they collect it from *Bir* (Forest). Because the big trees give *Osul* (shade) and *Hayeh* (wind) to them. In dire necessity the owner may get timber from it. Thus people always try to preserve the big trees of the village.

***RUN REHET* (MEDICINAL) :**

There are many plants whose parts are used as medicine for curing diseases of both man and cattle (Table-2). Most of these plants are available in their effective environment and some of them they collect from *Buru* (hills).

TABLE : 2 USE OF PLANTS FOR COMBATING DISEASES

Name of plant	Parts used	Mode of use	Disease
Alu arah	*Jaw* (green fruit)	Paste Applied	Burns
Bana hatak	*Baklat* (bark)	Paste Applied	Cattle wounds
Bade Daare	*Baha* (flower)	Paste taken orally	Infertility

Name of plant	*Parts used*	*Mode of use*	*Disease*
Birkohda	*Sakam* (Leaf)	Paste Applied on cuts	Stops bleeding
Champa baha	*Buda* (root)	Paste orally	Cattle bleeding
Dhubi ghaas	Plant	Paste applied on cuts	Stops bleeding
Hadjora naadi	Plant	On heating paste applied	Fracture of bone
Jhunjhuni naadi	*Buda* (root)	Paste taken orally	Asthma
Kadam daare	*Buda* (root)	Paste taken orally	Cattle disease
Kumb daare	*Baklak* (bark)	Paste taken orally	Diarrohea
Kund daare	*Bilhi* (fruit)	Juice taken orally	Dysentry
Kundri naadi	*Ita* (seed)	Oil used for massage	Muscle pain
	Baha (flower)	Paste taken orally	Infertility
Malhan naddi	*Sakam*	Applied on body	Fever of Cow
Muthu ghaas	*Bolong* (tuber)	Paste applied	Acute Headache
Neem daare	Leaf and seed	Oil used	On sore/wounds
Rangaini Janum naadi	*Ita* (seed)	Paste applied	Toothache
Upalbaha	*Bolong* (tuber)	Paste taken orally dissolving in water	Female disease

JHANTI (FENCING) :

Some of the plant species like *Kutus Janum, Sidauri, Began Daare, Bata* (bamboo split) and *Dor* (branches of big tree) are used for fencing the Budgay (kitchen garden) which is termed by them as *Jhanti.* It is made to protect the plants and crops *of Budgay* from the cattle. The branches are tied with *Naadi,* the rope like stem of creepers and also by splitted strips of *Konoi,* thin branches grown from nodes of bamboo tree. These thin branches are splitted into four stripes which are used to knot the branches of *Jhanti.*

GAROSTI (HOUSEHOLD) :

Use of plants and parts are further evidenced from application in household purposes. Thus it was found that big trees are used as *Kat* (timber), *Sahan* (fire wood). On asking how do the *Kat* and *Sahan* serve ? It was found that timber was used for *Sarim* (roof frames), making *Nahel* (plough), *Argon* (ladder), *Aadar* (yoke), *Silpin* (door), *Dhenki* (husking lever), *Dantrom* (handle) of *Kudi* (hoe and axe), *Khunti* (pillar) and *Rola* (cross beam) of making *orah* (huts). Timber was also used for making cart *(Dangragari, Karhagari), Kendri* (musical instruments). Then using Value frame' (good or bad) it was possible to uncover criteria concerning which kind of wood should or should not be used for those purposes. The attributes like *Jhaltet* (length), *Muruk* (hardness), much tolerable *(Tengo darom)* to load *(Hade),* resistent to *Huti* (wood lice), and *Bhari* (heavy) in weight make a wood to be considered as good timber. Thus the timber of *Bhalao* (good) quality is available from trees like *Ruth daare, Karkat daare, Murga daare, Karvoan daare, Arjun daare, Omeh daare, Matkom daare, Sarjom daare.* Among these *Ruth* wood is considered by them as best because it is heavy, hard and can carry heavy load. It does not decay in water and mud. So it is used in preparing the *Nigah* (axis) of *Chaka* (cart wheel), *Arkat* (beam) and also *Nahel*

(plough). This wood is less available and price is also high. *Nahel* (plough) in most cases are made up of *Sarjom* (sal) wood or *Arjun* wood. Because these are easily available. Although the *Sarjom* is heavier than *Arjun* yet it is used as it is less damaged in contact with soil. The shape of the notch of the plough remains in perfect condition for long time. *Dhenki* (husking lever) is made from *Arjun* wood generally, but they consider *Aasan* wood much better in this regard. It is of proper weight. lasts longer and not affected by *Huti.* In case of non availability they use *Sal, Kusum* for this purpose which are slightly heavier than the former trees. *Dhah* (hoot), *Omeh* wood are the best for preparing *Danrom* (handle) of *Korol* (pata), *kudi* (hoe), *Gaiti* (pick and mattock), *Kudal* (axe) etc. Because these are hard enough to last for longer time and its surface is very smooth.

Karkat wood is considered as of better quality for making *Rola* (crossbeam) of the huts. These are preferred for its considerable length with equal diameter all through and smoothness and also resistive to termites. Branches of other trees like *Sarjom, Begnadaare* are also used though considered by them as 'not good'. The *Silpin* (door) of the huts are made from timbers of *Bhotkusum* (pia-sal) as these are straight and do not bent but too costly. In practice they use *Uul, Jojo, Sal* whatever is available to them and those wood are not so costly.

Other materials like *Podkom* (cot), *Ganro* (wooden seat) are made from *Sal, Kusum* or other woods which are less costly. Similarly *Dangragari* (cart) is made mostly from *Sal* wood with *Bata* (bamboo stripes) because *Sal* wood is *Hamal* (heavy) and carries maximum *Bhar* (load) and *Tikao* (lasts longer). The people are now using iron made wheels replacing the wooden wheel for its longevity and less maintenance cost The people collect the wood of better quality from the nearby forests but they have to collect the wood like *Ruth, Panjan, Arjun* from the people who go to the deep forests. Besides, other uses of wood include supporting of *Sarim* (roof). The *Murhat* (stem) of *Sal* tree is used for that purposes which is known as *Khunti.*

In case of *Sahan* (firewood) the people can distinguish *Bhalao* (good) and *Kharao* (not good) quality on the nature of *Jalao* (burn); *Cotok* (quickly) and *Tahri* (lowly) nature of *Sengel* (fire): *Tej* (strong) or *Kom* (weak) which also depend on *Pherat* (diameter) of the wood.

The people collect dry branches of trees for firewood. Branches of all the good timber yielding trees are considered by them as good firewood but these are not always available. So they also use branches of *Charla, Didhori, Jojo, Maat, Begna, Kutus, Janum* and other trees available from *Lata* (bushes) for the same purpose.

Different parts of paddy plant are used for different household purposes. The *Busa* (husk) is used for boiling paddy to make *Tikki chauley* (parboiled rice). Husk mixed with *Jerer hasa* used for plastering the *Kandh* (wall) of huts. The burnt dust is used to paint the walls after mixing with soil *Hende hasa* (black soil). *Busub* (straw) is used for making *Babar* (rope) which is used to make the *Purabandhi,* a container for storing grains. It is further used for thatching the *Sarim* (roof) of *Orah* (huts). *Maat daare* (bamboo) is used mainly for roof frame as *Rola* and *Bata.* It is also used to make platform for keeping *Purabandhi,* called *Dhula.* Bamboo strips also are used for making *Khanchi* (basket) and *Barudung* (fishhook) and also *Anakh* (hanger of clothes).

Grasses of many varieties are also used. Rope made from *Baboi* grass are used to make top of *Podkam* (cots), now-a days nylon ropes are being used for the same. *Souri Ghaas*

is used for thatching roofs as well as thatching the structure in the *Jaharthan* (sacred grove for the deities). At present straw is used for the same. Broomstick is called *Jonoh* when made from *Jonok ghaas* and *Kharrang* (broomstick) when made from *Kharrang ghaas.* These arc also marketed and sold by them. The leaf of *Khajur daare is* used to make *Patiah* (mat) used to dry up the paddy and also for sleeping.

RECREATIONAL:

There are two types of musical instruments: *Kendri* (a Santal fiddle) and *Tiriya* (flute) commonly used by the *Bagal* (cow-boy) at the time of herding the cattle. The people also use these instruments when they are going to distant places. They collect *Kendu* wood to make the body of *Kendri* because according to them only this wood can produce good sound of the instrument. The people believe that good type *of Tiriya* (flute) is prepared from *Bir Maat* (wild bamboo) and not from *Atu maat* i.e.- domesticated variety of bamboo found in the village. For this reason they collect specific wild bamboo species from dense forest.

Most of the plant species people categorized were came from their effective environment and others from their perceptual environment These classification helped us to grasp two broad categories from functional aspect i.e. the *Rohot kiyae* (domesticated) and *Bir* (wild) varieties. These domesticated variety shows their perception of protected and non protected types. Almost all categories of plant species named by them are protected type which they try to protect for their cause. In wild varieties the 'good' types as cognized by them for their use in various purposes, they try to protect.

Thus it can be said that these people are doing useful exploitation of the available plant resources mainly in terms of food, wood and firewood. Due to non-availability of their preferred variety of plant species in their effective environment they are compromising with the available plant types which are considered in their values as ''not good'' type. Because of the reason the people are not at all willing to destroy the preferred varieties and at the same time preserving the big trees and plant of these types as well as other types available in their effective environment. The seeds are kept and preserved for re-use in their own way.

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ON THE QUESTION OF URBAN POVERTY IN A THIRD WORLD CONTEXT

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Abstract: On the cultural-social-technological sphere present authors observe that the concepts on poverty in general and urban poverty in particular are ordinarily overwhelmed by the obsession of giving emphasis on technology and other economic aspects of development where the global scenario of astounding level of capital accumulation in the developed world on the one hand and siphoning off of resources from the Third World as well as marginalisation of population on the other, seem to get fade away. Authors also reckon that many of these discourses on urban poverty have some immediate or distant bearings on the continued western desire for power to dominate and influence the Third World poverty situation and also devoid of any effort to enter into the urban poor people's world of perception about their own reality

I

Urban poverty as well as its effects on the human society and culture can perhaps be the greatest immediate challenge for mankind as most of the humanity is going to be living in the cities and towns by the turn of this century and the future of our race hinges on the successful tackling of this problem. Even according to the World Bank (1999) estimation, approximately 30 per cent of the poputation in developing countries are poor. Though the poor are still predominantly living in rural area, in the last twenty years an urbanisation of poverty has taken place as a consequence of various processes like rural to urban migration, economic crises, subsequent structural adjustment programmes and the incapability of managing urban growth.

The discourses on the urban poverty in Third World situation have so far been dominated by the effort to generate plethora of parameters (mostly in numerical terms) as well as calculations having various political, technical and scientific implications. A very brief account of some these concepts of urban poverty can be useful in this regard though it must be made adequately clear here that the present authors do not claim that the following account can do proper justice to the colossal amount theoretical positions in this regard.

A) **Absolute Poverty Approach**: This approach calculates a poverty line based on minimum necessities such as food, housing, clothing, fuel and some household sundries required to maintain physiological efficiency (Rowntree, 1901). Policy makers of many Third World countries including India favour this approach as it entails an implication that if a society can provide an income sufficient to meet subsistence needs earmarking the poverty line then poverty can be eliminated.

The determination of poverty line in many Third World countries like India tends to

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3. Expert Group on Estimation of Proportion and Number of Poor chaired by Prof. D T Lakdawala, while accepting the definition of poverty line used by the Task Force formed by the Government of India in 1979 (to evolve a methodology of estimating the incidence of poverty and defining poverty line at the National and State level, both in rural and urban areas), set out an alternative methodology for estimation of poverty ratios using quinquennial consumer expenditure survey data of the National Sample Survey Organisation and State-specific poverty lines.

revolve round the calorie parameter which fixes, for our country, the minimum urban requirement at 2100 calories per person per day, lower than the minimum rural requirement scale of 2400 calories per person per day leaving the provision of time to time calculation with the price index to get the exact minimum required income group.[3] This view, though sometimes proved useful in locating the urban poor people, is criticised due to its paucity of sufficiently serious study by the experts having up-to-date knowledge of science and by the absence of the other most important dimensions of the undernourishment i.e. inadequate consumption of proteins, vitamins, minerals, roughage etc. as well as the disorders, diseases and breakdown of the biological immunities due to deficiencies as we know that the urban poor who are living in densely populated areas as well are vulnerable to a host of communicable diseases. This view has also been criticised on the basis of its failure to differentiate between the poor who are unable to provide sufficient calories and the non-poor who voluntarily undertake lower calorie diets as a part of their life-style.'[4]

The percentages[5] of the population below poverty line are the ratios which poverty–analysts call Head – Count ratio, i.e., simply counting the number of poor, and calculating the number of poor, and calculating the proportion H– the 'head-count ratio' –of people below the poverty line. The traditional use of the head-count ratio as a measure of poverty can deflect anti-poverty policy by ignoring the greater misery of the *poorer* among the poor. Indeed, with the head-count ratio as the measure of poverty, any government faces a strong temptation to concentrate on the *richest* among the poor, since that is the way that the number of the poor – and the head-count ratio H –can most easily be reduced

An alternative to H – count ratio has been offered which measures the additional income that would be needed to bring all the poor up to the level of the poverty line, i.e. the minimum extra income that would be sufficient to wipe out poverty – in the form of the low income – altogether. The 'gap' called 'income gap' is expressed in per capita terms, viz. the average shortfall I of income of the identified poor from the poverty line (Anand, 1978; Beckerman, 1978). But both H and I are completely insensitive in one aspect or other (H is completely insensitive to the extent to which the incomes of the poor fall short of the poverty line and I is completely insensitive to the number of heads involved). H and I together are also insensitive to the distribution of income among the poor. If D is the measure of inequality in the distribution of income among the poor then perhaps an axiomatic derivation of poverty

4. Although present authors do not support Surjit Bhalla's (1999, 2000) effort to portray a much less severe poverty scenario in post-reform India but it is found to be worthwhile to mention one of his studies on the consumption aspect of poverty measurement which he submitted for publication as background paper for World Development Report in 1980 (the title of the paper was 'Measurement of Poverty - Issues and Methods'). In that study he showed that acceptance of FAO data on caloric norms would mean that 67 per cent of the American males and 80 per cent of the American females had a caloric consumption level below the FAO requirement - and hence can be regarded as malnourished.

5. The Expert Group Methodology for updating urban poverty line was solely on the basis of Consumer Price Index of Industrial Workers. Government of India instead approved a methodology for updating urban poverty line on the basis of an average of Consumer Price Index for Industrial Workers and Consumer Price Index of Urban Non-manual Employees (CPI-UNME). Economic Survey 2000-2001 indicates a decline in the poverty ratio, though the number of poor remained stable for two decades (1973 -93), mainly due to the increase in population. While 55th Round survey (July 1999 - June 2000) of NSSO estimates a poverty ratio (on a 30-day recall basis) in rural areas at 27.09 percent and 23.62 percent in urban areas According to this estimate the total number of poor has significantly reduced to 260 million out of a total population of 997 million from 320 million in 1993-94.

is possible that is sensitive to all these three related but distinct considerations. Sen (1973, 1976) identified D as the Gini coefficient G, and it thus led to a poverty measure P that depended on H, I and G. The exact formula is P=H[I+1-I)G].[6]

However, according to the observers, the calculation of an income (or expenditure) satisfying the calorie norm may lead to such a misclassification due to the lack of monotonicity between the income and calorie intake. Thus having an income above the poverty line is no guarantee that calorie intake too will be above the required level, Similarly having an income below the poverty line does not indicate that calorie intake is actually deficient (Rao,1982 and Dandekar and Rath, 1971). But worry still exists towards the severely deficient calorie intakes - beyond the scope for adaptation or variation i.e. on the verge of impairment.

Another major absolute poverty approach encompasses the idea of subsistence or basic needs of the Third World poor (urban or rural). Supported by worldwide organisations like ILO, UNESCO, the World Bank, IMP and the like, it evolves around two key elements a) insufficient income to maintain requirements for food, shelter, clothing and certain household goods, and b) insufficient essential services that is safe drinking water, sanitation, public transport, health services and education. The criticism labelled against this approach advocated by the international organisations is restricting the human needs of poor people in Third World countries to what is required for mere physical survival i.e. the 'unsophisticated' peoples are deemed to have lesser needs that those in -complex (Western) civilisations'.

B) **Relative Poverty Approach**: Here the measure of poverty and number of people in poverty are achieved by comparing one's condition to social average of the standard of living determined by a) level of income (including resources such as assets, housing, company fringe benefits, education, health and other social services) necessary for individuals to participate in the wide range of roles, relationships and b) consumptions that constitute full membership of the society in which they live. Measuring relative poverty by taking one-half the average of median income of society at large is still a common practice in the European countries. Worldwide methods of measuring relative poverty go along three main ways:

a) social consumers approach (Mack and Lansley, 1985) based on a common public of what goods and services are deemed to be essential to everyday life;

b) the budget standard approach (Bradshaw. 1993) where experts make professional judgements as to how much different types of family units need to live on;

c) behavioural approach (Townscnd, 1979) examines how people actually behave in relation to different income levels.

In this relative approach on poverty makes the notion of eradication of poverty harder than under the absolute poverty approach as it is dependent on a reduction of inequalities within societies thus projecting the poverty as the other side of the coin to wealth.

II

Let us now turn to the socio-cultural side of the discourses on urban poverty. Stalwarts like Max Weber and Arnold Toynbee saw the city as a settlement peopled by those who

6 For proper statements of the axioms and the proof of the theorem deriving this exact measure see Sen, 1976

maintained livelihoods largely by non-agricultural activities. However, these views are criticised as they ignore significant differentials not only between individual cities but also between different historic and economic contexts; in the case of Third World cities, these contexts arise largely from the experience of colonialism. Perhaps Marx's view of the city has been of more use to in this approach, as he saw the city as a set of social relations existing under particular historical conditions, in which a particular set of class relations are played out. However. Weber, Durkheim and Marx and Engels all were not ready to take the city as a theoretical unit of analysis, a view which has now increasingly lost favour among present-day social scientists for multiple reasons, among them that cities house an increasing proportion of the world's poor population and that the source of political and social change is often found in urban centres (Southall 1999).

One must, however, differentiate Western urbanisation with urbanisation that occurred under colonial rule to get nearer to the proper scenario of the urban poverty in Third World. Thus as Magubanc indicated "urbanisation that occurs under imperialist expansion possesses *a* dynamic which by no means replicates that of the autochthonous process of Western Europe ....but reflects a negative dialectic of imperialism" (Magubane. 2000: 239), but many social scientists do not take this into proper account.

It is clearly risky to view Third World cities through the lens of Western industrialisation, but almost all of our intellectual resources for analysing and understanding cities are predominantly recent and Euro-American. However, anthropology can be an ideal vehicle for overcoming this European bias because of its particular awareness of ethnocentrism and strong association with ethnography. Traditionally anthropologists have tended to focus on small rural communities, and anthropological interest in cities is recent and though profound, it is still somewhat lacking both in theory and recognition. Of particular interest to anthropologists are the urban poor who in the past "like the rural poor were taken for granted, as part of the divine plan. This is no longer so as the poor arc still very much with us.."(Southall, 1998: 5).

Western anthropologists' ventures to explain the concepts of poverty have frequently ended up distinguishing the 'deserving' from the 'undeserving' poor. The former accepts dominant values of their society. They aspire to better themselves or, at least to achieve respectability in fulfilling social norms. The latter reject these values. In the eyes of the 'middle classes' the former merit assistance, the latter punishment. This dichotomy has parallels to the classification by Stokes (1962) of 'slums of hope' and 'slums of despair'. The formers are peopled by the upwardly mobile, the latter by the downwardly mobile. In each case a subdivision is made reflecting the degree of mobility actually possible rather than expected. The slums of hope will become integrated into the mass of the working populations; the slums of despair will remain the homes of the dregs of society - the dropouts. Another major concept in anthropology was "culture of poverty' (Lewis, I959; 1966) where the lack of effective participation and integration of the poor in the major institutions is one of the crucial characteristics. Anthropologists now ceased to use these conceptualisations. Though as the present study indicates that the urban poor certainly have understandings of themselves and the world in which they live.

It has also been argued during the last few years that the impact of globalisation and its resultant structural adjustment programmes (SAPs) have been felt hardest in the cities

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of the Third World. This impact has hit the Third World urban poor in various and predominantly negative ways, including cuts in spending on education, health, and other services. The combination of austerity budgets, market liberalisation, and exchange rate reform has resulted in many cases in sharp increases in food prices, and in terms of livelihoods, has also eliminated significant formal sector (e.g. relatively stable) work, and reduced wages (UNCHS, 1996; Maxwell 1999; Rogerson 1997). The concept of 'over-urbanisation' of the Third World cities i.e.. 'oversupply' of urban labour in de-industrial economics (Gilbert and Gugler. 1991) appeared to explain the above situation and can best be addressed in terms of the absence of proper job-creating industrialisalion coupled with agrarian development including land reform, irrigation and better agricultural techniques. Another theory arose little earlier and continued to explain how this situation had come about viz., Lipton's "urban bias" theory, which argued the existence of a class-like divide between rural and urban areas (Lipton, 1977). Articulation theory (Kearney, 1936: 82) also regards urban poverty as an extension of rural poverty and primarily deals with the issue of migration as the root cause of the urban poverty. On the next level articulation notion deals with the job market (mostly in informal sector) in the city as the stream of mostly new unskilled labourers are added to the city's labour force regularly. New rural migrants are added to the urban population and get non-productivcly engaged thus the level of poverty goes up. It leads us to the transitional nature of the urban poverty through time and space scale involving a shift from group to group and area to area. These theories also contributed to SAPs and the goal of restraining urban wages and labour markets. They also implied that the study of poor households must focus on rural areas. However, "the notion of the city exploiting the countryside is too grass to guide analysis or political practice" and that considerable arguments exist for an urban focus (Sandbrook, 1982:24). In particular, inequality and exploitation are most visible in the cities. and anthropological as well sociological studies generally hold that organisation of the poor is usually led by the urban proletariat and urban intellectuals.

Present authors would also like to add that (empirically speaking) the role of migration in compounding the urban poverty scenario is also undeniable but attaching too much importance on the role of migration in this regard has sometimes found to be somewhat misplaced. It must be said that urban development and proliferation of the urban population along with migration towards city are inextricably bound with the economic development throughout the history of our civilisation. The view that the millions of rural migrants are regularly pouring in some metropolitan cities can also be rebutted on the notion's own empirical basis. Using comparable urban size units Mohan (1981) demonstrated that in reality towns and cities of all sizes have been growing at roughly comparable rates in India at least from 1951 to 1981 that the share of million plus cities in the total population of Class I cities has not increased appreciably since 1951 to 1981 that the distribution of city size in India is relatively even and that historically no dramatic changes should be expected till this century. It can also be mentioned that Kolkata was - up to 1981 - the largest urban agglomeration in India. Its growth has been slow in recent decades, although it grew by over 10 per cent annually in several decades during the last century. Partition during the independence period is probably the last major crisis which the city of Kolkata had to face. With partition a stream of population without much help for their rehabilitation came to this city and the population has been absorbed in the city at various levels of economic

condition. The city never ceased to grow albeit in a way the other Third World cities have grown. Kolkala is now the second largest agglomeration with 10.9 million inhabitants (the reason of becoming second is however not actually a slow growth of Kolkata but the joining of Thane and Kalyan with Greater Bombay urban agglomeration). The crowded living conditions and the pressure on housing stock, besides the low growth of manufacturing activities have contributed to the slowing-down of its demographic growth. The growth trend of all the three metros remained almost the same during the 1990s as revealed in the provisional data of 2001 census.

Thus one should not disregard the fact that the city is the abode of the migrants - the fact which the earlier settlers as well as elites in a city tend to ignore - thus sometimes find themselves in a position which is to blame the rural immigrants for urban poverty. This position is also tantamount to the presently stringent western position regarding the issued of migration from the Third World which does not cater to looking at the human crisis as a whole. Countryside agrarian crisis has always been one of the main causes of urban settlement in the post-industrial age in the Third World. Urban settlers come to the cities to earn better living and to enjoy modern technological achievements in their everyday life. This is as true for the early-sellers, who claim themselves as 'civilised' (almost) autochthons in the city as for the late-settlers.

Present authors observe that the concept of urban space is also regarded in the socio-cultural sphere as a major aspect of the study of urban poverty in Third World especially by some Political Economy Theorists in anthropology. Urban space is primarily regarded as a material product in relation with other material elements among other, men who enter into various social relationships among themselves (and to the other elements) giving a particular form, function and significance of a particular urban space. For an anthropologist every human space (in city or in village) is a product of purposeful human activity, and of culture, they can never be chaotic (a widely held Western notion to describe the Third World cities) there is always an order present. The dominant interests of the capitalist mode of production lead to a massive reconstructing of the urban space (read squatter settlements and slums in the Third World cities) as found in the present work and assigns new social meaning to the city. Significance of urban space in explaining the phenomenon of urban poverty among these anthropologists can be found to the fact that it is the arena, within which among other things, the reproduction of labour is concentrated - an arena within which individuals reproduce their labour power (rest, recreate, procreate, learn etc.) through private (self-provided) and collective (state-mediated) consumption. Thus in urban space two related aspects of the social order are worked out; the accumulation of capital and conflict between different interest groups in which social class is a major base of urban coalition. The meaning or symbolic significance that a particular urban area takes on is in part the outcome of a struggle among different interest groups that compete to control urban space. Social class is regarded as one of the major social divisions along which interests are aligned (Castells, 1977; 1983).

So the basic forms of urban crises i.e. in housing, services and social control can find its expression and the concept of urban marginality in terms of urban space emerges which according to the present authors is an important parameter for locating as well as analysing the features of urban poverty. Urban marginality in term of urban space is not always synonymous with urban poverty per se as the 'marginal settlements' (marginal settlements

in Kolkata can be a) self-constructed squatter settlements on useless urban land; or b) slums concentrated in different parts of the city including in the urban core) are not always the abode of the poorest section of the population but almost all of the families of urban poor live in these urban settlements. Kolkata, like other Third World cities, is dotted and ringed by these makeshift marginal settlements of people who have constructed dwellings of property they either do not hold title to or have later been authorised by the government to live on by can not sell. The so-called spontaneous or self-help housing occupies vast tracts of urban space and in many areas the permanence and systematic upgrading of these squatter settlements and slums including the provision of utilities and social services, represent the tacit acceptance by urban authorities. However, the sprawling illegal settlement stands as a monument to the desperation of those without any other option but to shelter themselves.

III

Present authors, in their quest for an ethnographic discourse on urban poverty, studied two marginal settlements (named here as Population - I and Population - II) in the city of Kolkata for a long period of time. **Population I** (studied during the November and December of 1993, January and February 1994 and September and October 1995) was a squatter settlement on the southern edge of the Park Circus - Eastern Metropolitan Bypass Connector which was evicted on 25th November, 1995 to expand the Connector. **Population II** (studied during January, February, May and June 1995; January, February and March 1996; December 1997; January and February 1998; May and June 1999; December, 2000; May and June 2001; October as well for a brief period in December 2002) was a squatter settlement on the eastern side of the Canal West Road near Narkeldanga Police Station which was devastated by fire on 26th January, 1999 and finally evicted on 10th December 2002 as a part of implementing the Ganga Action Plan.

Detailed demographic as well as ethnographic profiles of both the settlements can not be discussed in the short span of this paper[7]. However, a very brief glance on some of these profiles along with some associated ethnographic details must be given here to get an idea of both the populations. Combined data of both the populations indicates that the persons in the three age-groups below 15 years (i.e. 0-4 years, 5-9 years, and 10-14 years) accounts for more than half of the total population (52.96 per cent). Hence it may not be surprising to note that in both the populations, the highest proportion of persons are found in the age-group of 0-4 years (18.81 per cent) followed by the age group of 5-9 years (18.00 per cent) and the age group of 10-14 years (16.15 per cent). There is a sharp fall in the frequency of population in the age group 45-49 where it reaches to 2.89 per cent. Then the declines continue in the age group 50-54 years (2.20 per cent), age group 55-59 (1.29 per cent) years and finally in the age group 60+ years (1.84 per cent). This trend is an indicative of the fact that a substantial proportion of these persons (especially the female-folk of this population) are not expected to survive beyond the age of 40 years. It might not be an uncommon finding among these marginalised populations in a Third World urban situation where the lived experiences of these people suggest that the females are compelled to do all the household works as well as have to earn a substantial part of their family

7. For the detailed population and other accounts of Population - I one can visit the authors' personal website- http://www.msnusers.com/17pb99o3jmj8sjr2184n4olnu6/Documents/Web%20Page%2DSSB.htm.

incomes. Above all these domestic and occupational drudgeries, female members of the urban poor families are subjected to a worst kind of sexual life and are used to bear children four or even five times (which may or may not include the number of miscarriages) in their reproductive life. All these have caused higher mortality among the females of these urban poor. Also noticeable is the fact that in both the populations, the frequency of the families with more than 4 members is highest (51.85 per cent) followed by the frequency of the families with 2 to 4 members (47.22 per cent) which indicate a lack of meaningful family planning measures among these poor people irrespective of religion or community. It was also seen that the literacy rate among these people is only 44.08 per cent and the gender-wise distribution of this rate shows that in the both the populations, the male literacy rate is 67.31 per cent compared to the female literacy rate of 21.15 per cent which are far below the national and stale levels. The frequencies of holding of ration card for the Public Distribution System (PDS) is still considered an essential condition of legitimacy as a city-dweller in Kolkata as well as the only means for access to the subsidised food-items and kerosene oil both of which are so-much essential for the survival of urban poor in a city like Kolkata. The feature of ration card holding is rather negligible among these people (0.54 per cent) and those negligible few ration card holders have registered some other places as their home addresses. Contrary to the popular notion that being a legitimate voter of an area or a particular city would make a person a legal inhabitant of that area or that city, it was found during the present field work that in both the settlements as high as 29.96 per cent, (of a possible 41.07 per cent voters), of these people have their names in the electoral roll. It shows that in a Third World urban situation like this, the criterion or having voting right in a city might not be considered enough to gain legitimacy as a city-dweller of the same city.

In both the settlements sizable sections people were reported to be born and brought up in the place in which they were living at the time of study or in an adjacent place (24.97 per cent) which contradicts the 'myth of migration'. The other sizable sections reported to be born in Bangladesh (26.45 per cent) or in the neighbouring provinces of Bihar and Jharkhand (26.45 per cent),[8] Most of the settlers have settled here between 11 and 15 years (23.52 per cent) followed by the period between 16 to 20 years (19.63 per cent).

It has also been evident that in Population - 1 and Populations - II, 90 82 per cent people are in labour force and 88.24 per cent of the people are in actual work. This labour force participation trend becomes more frequent among the males (96.48 per cent) than the females (85.42 per cent). In both the populations, 2.79 per cent of the Labour force is unemployed. This trend is higher among the females (4.16 per cent) than the males (1.63 per cent)[9] Few notes from their lived experiences may be necessary here to take into account in this regard. One, in Population - I and Population - II majority of the population are engaged in unstable and subsistence level incomes in the informal sector of economy which

8. During the time of present fieldwork the stale of Jharkhand was not created

9 According to NSSO 55th Round Study during 1999 - 2000, in India the unemployment rate is 2.3 per cent (4.0 per cent in West Bengal) and in urban India this rate is 4 8 per cent (7 6 per cent in urban West Bengal). Gender-wise distribution of the unemployment rate shows that among the Indian males 2 5 per cent is unemployed (3.9 in West Bengal) and 1.8 per cent of the Indian females (4 3 per cent in West Bengal) are unemployed In urban India 4 5 per cent males (7.2 per cent in West Bengal) are unemployed in comparison to 5.9 of the female-folk (9.7 per cent) are unemployed

has also been called as incidences of 'misemployment'. Two, in Population - I and Population - II a very high percentage of children are in actual workforce and many other children are in labour force that can not be accounted for in the present estimates on employment and unemployment. Three, it was seen during the present work that the persons in both the populations have no other choice but to earn in each day or face the threat of starvation. All the three factors possibly kept the estimated figures on unemployment to a much lower level than expected.

It has also been revealed that in Population - II and Population - II, 89.86 per cent children (in the age groups 5-9 and 10-14 years) are in labour force of which 90.59 percent are boys and 89.07 per cent are girls. It can also be observed that in Population - I and Population - II 84.19 per cent of the children are working, of them 86.01 per cent are boys and 82.24 percent are girls. figures are phenomenally high when compared with the national and state estimates of child labourers in 1991 in combined areas[10] as well as in urban areas,[11] The estimates of the working children vis-a-vis working adults of both of these populations can also give an idea about the contrasting involvement in work force. In Population - I and Population - II 40.91 percent of the work force are child labourers in comparison with 59.09 percent working adults. Gender-wise divisions indicate that 41.07 percent male workers are children and 58.93 percent are adults. On the other hand, 40.73 per cent female workers are children and 59.27 per cent are adults.

On the type of primary occupation we can see that in Population -I and Population - II salaried workers of 'traditional' sector of the economy accounted for only 1.28 percent of the total working population and 9.22 per cent are skilled workers (*matrix),* handicraft persons and small merchants. Whereas as high as 52.75 per cent are urban waste recycle workers (category includes scrap pickers, door-to-door scrap buyers, scrap-sorters and a very lew scrap-dealers) and 36.24 per cent are sellers of their labour to people for the personal service and consumption of the buyers instead of using their labour power to obtain a surplus value (category includes domestics, porters, helpers in construction, van/rickshaw pullers, tea stall/restaurant workers, bidi workers etc.). It is, however, important to note that the 'skin sellers' exchanging their survival against the possibility of potential destruction (e.g. prostitute, delinquent etc,) or trade their deterioration (e.g. beggar), a common occurrence among the marginalised population throughout the Third World, are very few in Population-1 and Population - II. Only few beggars (0.51 percent) are found in this category of occupation. On further investigations, it was found that there are few cases of incomes from prostitution as well as delinquency in both the populations but neither the prostitution nor the delinquency was the primary occupation of any of the inhabitants of these two settlements.

It has also been observed that the majority of the workers (66.90 per cent) receive payments on daily basis, an observation which further reiterates the findings regarding the

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10. According to 1991 census data 5.4 percent children in India (4.2 per cent in West Bengal) found to Of these children 5.7 per cent (5,6 per cent in West Bengal) are boys and 5 1 per cent (5.1 per cent in West Bengal) are girls (RGI. 1998),

11. As per the same census data of 1991 in urban India 2.0 percent children (1.9 percent in West Bengal) are found to working of Them 2 8 percent are males (2 4 percent in West Bengal) and 1 2 percent females (1.3 percent in West Bengal),

uncertain means of income. Here majority of the people earn between Rs. 51/- to Rs. 75/- per day (49.63 per cent) and a sizable section in both the populations (23.15 per cent) earn less than 50 rupees per day. Thus most of those families would definitely slip below the poverty line[12] when compared with national and state data in the urban areas.[13] Household incomes between Rs. 76/- to Rs. 100/- (16-30 percent) and above Rs. 100/- per day (10.93 per cent) are in lower frequencies indicating their overall poor economic condition.

On the share of pucca, semi-pucca and katcha[14] houses it has been observed that in Population - I and Population - II almost all the houses (98.15 per cent) are of katcha structure and only a negligible proportion (1.85 percent) is made of semi-pucca structure. Majority of households in both the populations (77.22 per cent) are rented. It has also been observed that the majority of rented households in both the populations (48.78 per cent) pay monthly rent of an amount from Rs. 101/- to Rs. 150/- followed by a monthly rent ranging between Rs. 151/- to Rs. 200/- (34.15 per cent). Few rented households (7.32 per cent) pay an amount of up to Rs. 100/- and some households in both Population - I and Population - II are paying higher monthly rents ranging from Rs. 201/- to Rs. 250/- (4.88 per cent) and 9.76 per cent of those rented household-occupiers are not willing to divulge the amount of monthly rent they pay for their households.

It has further been observed that in Population - I and Population - II majority of the households neither have no latrine facility (30.19 per cent) or they have some makeshift latrine (64.26 per cent) used by more than one household. Most of the households in Population - I and Population - II have either water tap outside premises (community use) as their source of drinking water (81.48 per cent) or tubewells - handpumps as their source of drinking water (18.22 per cent). None of the households in both the populations have taps within the premises. In Population - I and Population - II overwhelming majority of the premises have plinth area of below 30 sq. metres (93.89 per cent) and very few premises are with plinth area of 30 sq. metres and above (6.11 per cent). Most of the households in both the populations have katcha (mud) floor (42.04 per cent) followed by pucca (cement and brick) floor (32.59 per cent) and semi-pucca (mud and brick) floor (25.37 per cent). In both the populations most of the households have roofs made of tiles and slate (50.56 per cent) followed by households with katcha type (grass, straw, reeds, bamboo, mud, plastic sheets, tyres, etc.) roofs (49.44 per cent) and none of those households have roofs made of cement, RBC, RCC. The walls of most of the households in Population - I and Population - II are either of katcha type (grass, straw, reeds, bamboo, mud, plastic sheets, tyres, etc.) or are made of brick (burnt and unburnt) and mud (39.81 per cent) while few of those households have walls made of cement, RBC, RCC (11.30

12. Poverty line is officially measured in India as Rupees per capita per month

13. According to Planning Commission data in urban India the poverty line is Rs 454 11 per capita per month during 1999-2000 while in urban West Bengal it is Rs 409 22 per capita per month

14. According to NSS definition which has been taken as standard in the present work, a **kateha** structure is one whose walls and roofs are made up with mud, bamboo, grass leaves, reeds, thatch or unburnt bricks; a **pucca** structure is one whose walls and roof are made of burnt bricks, stone, cement, concrete, jack board (cement0plastered reeds), mosaic, tiles or timber; tiles, galvanised tin or asbestos cement sheets used in construction of roofs will be regarded as pucca material, a **semi-pucca** structure is one of which either the roof or the walls, but not both, is made like that of a pucca structure (NSSO, 1998a)

per cent). On the other hand, it has been observed that the people in Population - I and Population - II are mostly suffering from the various diseases related to skin (26-27 per cent) followed by the diseases related to stomach (19.16 per cent).[15] Preponderance of skin diseases is due to the high proportion of engagement in the scrap/waste-related occupations. There are some kind of other diseases in both the populations specifically related to malnutrition (6.66 per cent) and chronic illnesses related to heart, lung or nerves (1.48 per cent).

Thus, during the present fieldwork it has been found the urban poor people are residing in both these settlements live under immense deprivation as well as with acute desperation and are living without the security of tenure of their settlements. They are living in dingy, unhygienic places with little or no sanitation and very limited access to filtered water with a constant threat of having communicable diseases. The desperation seems so severe to these poor and marginalised people that the question of their survival along with their means of income with the network necessary for income are inextricably bound with the survival of their living spaces i.e. their settlements. But, as observed during the fieldwork, these settlements often get become evicted nowadays for various reasons. But one can identify that the forces of urbanisation as well as globalisation for the last one decade have actually forced the local authorities to take such harsh decisions. One can say in the similar vein as Southall, an eminent anthropologist, "All the most admirable and desirable achievements have been intensified in the city, as have the worst horrors" (1999: 1). There are evidences that an astounding level of wealth accumulations in the Western countries have happened by siphoning off resources from the Third World[16] as a result of the indomitable forces of glogalisation. At the same time these poverty-related horrors in a third World city like Kolkata are as real and show on signs of reversal whatsoever.

'Lived experiences' of these people also have reflected the similar desperation. In the present work, as a part of an effort to identify the present state of the relaity from the actors' point of view, the culturally cognisant items of both the populations are ranked according to emic view (a quantitative way of inferring the qualitative data regarding 'lived

15. These settlements were studied in different intervals but to study the diseases present in a particular population one need have a reference period as many diseases are not supposed to be permanent Thus Population I was studied for this purpose during May, 1995 and Population II during December, 1997

16. The world has deep poverty amid plenty. Of the world's 6 billion people, 2.8 billion–almost half–live on less than $2 a day, and 1.2 billion-a fifth-live on less than $1 a day, with 44 percent living in South Asia... In rich countries fewer than 1 child in 100 does not reach its fifth birthday, while in the poorest countries as many as a fifty of children do not And while in rich countries fewer than 5 percent of all children under five are malnourished, in poor countries as many as 50 percent are

This destitution persists even though human conditions have improved more in the past century than in the rest of history–global wealth, global connections, and technological capabilities have never been greater But the distribution of these global gains is extraordinarily unequal. The average income in the richest 20 countries is 37 times the average in the poorest 20–a gap that has double in the past 40 years and the experience in different parts of the world has been very diverse...In East Asia the number of people living on less than $1 a day fell from around 420 million to around 280 million between 1987 and 1988–even after the setbacks of the financial crisis. Yet in Latin America, South Asia, and Sub-Saharan Africa the numbers of poor people have been rising. And in the countries of Europe and Central Asia in transition to market economies, the number of people living on less than $1 a day rose more than twentyfold (From *World Development Report 2000/2001. Attacking Poverty:* Page 3-4).

exprerience') during different time periods as part of having some understandings on the world of percetions of these people in both the settlements and found the rankings[17] as follows:

Population-I	Population -II (First Phase)	Population-II (Second Phase)
1. Income/Job	1. Income /Job	1. Income/Job
2. Security of Tenure	2. Cooking Fuel	2. Recereation
3. Cooking Fuel	3. Food	3. Marriage/Sex
4. Food	4. Marriage/Sex	4. Food
5. Drinking Water	5. Recreation	5. Cloths and Ornaments
6. Marriage/Sex	6. Cloths and Ornaments	6. Security of Tenure
7. Cloths and Ornaments	7. Security of Tenure	7. Cooking Fuel
8. Latrine	8. Drinking Water	8. Drinking Water
9. Housing Condition	9. Housing Condition	9. Housing Condition
10. Health	10. Latrine	10. Latrine
11. Recreation	11. Festivals	11. Festivals
12. Festivals	12. Health	12. Health
13. Eduction	13. Education	13. Education

The study was conducted in three different phases, once among the people of Population–I and twice in Population–II. As the results on population profiles and living conditions of both the settlements are so similar, this emic ranking study among both the populations can be regarded as a continuous study with the first phase done in the Population–I (during September and October 1995 when threat of eviction was looming large on this population) and the rest two phases in Population–II (first phase during December 1997 and the second phase during May and June 2001). This emic study (which spanned from the later half of 1995 to the first half of 2001) hopes to analyse the changes in the world of perception of these people during this period in which the unprecedented pressure from the forces of globalisation were reaching to crescendo.

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17. Ranking was done by the free lists method. It started with a primary question to generate items in that cultural domain·

What are the basic requisites of life you can think of?

A pre-test was done with some key informants to ensure that my primary question works. It was not an open-ended question The informants were asked to name all the basic requisites of life he can think of and no clue of the examples of answers was given

The next step was to ask the secondary question to give clarification to distinguish items given as response to primary free list question

'Which of these basic requisites of life are most important for your livelihood?

For this secondary question the selection of knowledgeable as well adequate number of informants is highly required Thus in the above secondary question a ranking from most to least was tried in each case and a good deal of individual differences was found that eventually proved to be a great source of very important information.

To select the informants for this purpose in the present fieldwork (48 informants from Population–I and 74 informants from Population–II in the first phase and 65 in the second phase) always tried to keep in mind that the informants come from both genders as well as from all age-groups and able to be sufficient articulate, proper observant, sufficiently encultured and able to follow the method of investigation.

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It become evident during every phase of the study that the majority of these people have attached maximum importance to proper (better) income or job which is an expected find among the marginalised people. As the Population– I was studied just before their eviction; security of tenure forms the next important culturally cognisant item because during the present fieldwork these people were feeling insecured as well as found very much disgruntled with the imminent eviction. Otherwise security of tenure comes in a much lower position (7th or 6th position) in Population-II. In the Population–II it was found that even the day before the date of eviction most people in the settlement remained more or less calm and composed and found to be either trying to retrieve their personal belongings as much as possible or trying to collect the compensation money (Rs. 1500/- only) from the nearby police station. The concern for providing cooking fuel and drinking water have secured higher positions during the first two phases of study but these items slipped down to lower positions in the third phase of study only to be taken over by the items like recreation and marriage/sex. Once again, this change among the people of Population – II during the study period was not due the emergence of a better provision of cooking fuel and drinking water. The reason can be sought in another domain i.e. the advent of far more attractive and affordable modes of recreation through television, video etc. Younger section of the Population – II in particular found to be more frequent cinema-goers and spending more time watching television in some neighbouring places. The unprecedented proliferation of these attractive as well as affordable means of entertainment is the results of globalisation which grew immensely in this aspect. It is also notable that the concern for the basic components of collective consumption i.e. housing condition (with the facilities like electricity, enough air, less cold, less water-clogging or mud during the rainy season and water impermeable roof, wall as well as floor), latrine, health etc. comes very low in their emic rank in all phases of the present study. Another noteworthy feature of this emic ranking was that the education, considered to be one of the most important items by the anthropologists in any culture, comes as the last item of the list of their culturally cognisant items according to their own ranking.

These reflections on the 'lived experiences' of the urban poor may seem somewhat unexpected for those anothropologists including the present workers who has been somewhat preoccupied with the notion that some components of the living conditions of these poor people (e.g housing conditions, drinking water, latrine, health etc.) should be considered as the basic components for the bare survival of an individual and this should fact should be reflected in the perception of the urban poor. Present authors observe that while the first part of the notion may be right but it does not lead to the next conclusion regarding the reflections in the perception of the urban poor. Present authors observe that while the first part of the notion may be right but it does not lead to the next conclusion regarding the reflections on the perceptions of the urban poor as these components figure to lower positions according to their emic ranking. This is not to suggest the jaundiced view that 'the poor are fundamentally satisfied with urban, too busy making ends meet to protest, and, as time goes on, become astute petitioners in the 'demand-making' process (Cornelius, 1975). Present workers still believe that absence of the security of tenure is one of the main causes of the spiralling poverty of these people. But as Gilbert (1994) observe in Latin America that on balance 'there is relatively little protest given the appalling conditions in which so many people live'. The same can be applied to these two populations where

even the evictions of these populations did not witness any major violence or protest. In both of these settlements, the inhabitants during the present field work found to be not so much obsessed with their poor living conditions. Neither any major movement was reported in any of these two settlement over the level of collection consumption. Thus the question remains, why this pattern of 'apparent passivity'? It has been found throughout the present fieldwork that the political participation seemed to take the form of deference under some populist measures primarily on behalf of the local municipal councillors with small concessions in the form of services and subsidies, thus causing a political passivity on the part of the inhabitants of both the settlements and it became somewhat clear that people of both of these settlements had somewhat mentally accept the eviction. The other major reason for the aforesaid mental preparedness, apart from the political passivity, seems to be the fact that the left parties (which had the largest followings in both the settlements) by and large accepted the decision of evictions of the both the populations as fait accompli in the 'large interest of the city of Kolkata.

Present study, however, considers that among other things like income, health and education; security of tenure must be regarded as one of the basic dimensions of urban poverty in a Third World situation like Kolkata, even though the poor themselves may not attach maximum importance to this dimension, as almost all the urban poor live in the 'marginal' settlements where they do not have any clear title and evictions (a frequent incidence in these settlements) cause a loss of physical capital and damages in social as well as informal networks of jobs and safety nets. It is also noticeable that the security of tenure appears low in the priority list of these urban poor in the normal circumstances only creeps up in the priority list in the face of any imminent evictions, Findings in the present work also suggest that the urban poor understand their poverty primarily as a cycle of low and insecure incomes (combined with indebtedness) which is exacerbated by calamities like fire, eviction, illness, marriage expenses and sometimes expenses towards addictions. Though the main economic factors and activities like income/job, cooking fuel, food, drinking water etc. are prioritised by the urban poor, non-economic dimensions of livelihoods like recreation, marriage/sex, cloths/ornaments etc. have also become important aspects of the studied people's life which in some way an indicative of a 'liberated' globalised culture. Though most of the observers on urban poverty (both with absolutionist and relativist bents) attach maximum importance on some aspects like income, education, health, housing conditions, latrine facilities etc. to explain the conditions of urban poverty; it was found during the present study that the urban poor themselves conceivably with a sense of passivity and irony append lesser importance to these dimensions in their own life.

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MUSLIM SOCIETY AND CULTURE IN BENGAL : TRADITION AND CHANGE

Sekh Rahim Mondal

Abstract : The present paper is an attempt to highlight the dynamics of Muslim Society of India in general and Bengal in particular. To deal with this, the traditional social organization of Muslims and the trends of change therein has been highlighted. This paper presents an analysis of social structure and social organization of the Muslims on the basis of groupings, interrelations and interactions among various units of this society. In this paper the interaction between the great tradition of Islam and the little traditions of the place in the framework of Muslim society and culture has also been taken into the account.

INTRODUCTION

Muslim constitutes the largest minority of India. The social and cultural life of the Muslims living in various parts of the country displays distinctive features, as they are influenced by both the Islamic as well as regional and local traditions. Muslims are the members of Islamic community *(Unna)* out of common belief and faith. But it is not the concern of everyday practical life, where they interact with the local cultures. Therefore, curiosity arises in many quarters to know the nature and character of this community with special reference to their society and culture.

Bengal has a very significant number of Muslim population. Bengal Muslims adhere to the basic principles of Islam and at the same time share the local traditions of Bengal. There is no conflict between the two spares, although both the boundaries are sharply defined by their respective ideology and practice. Bengal Muslims share little traditions of Bengal i.e. the Bengali culture, which is common to both the Hindus and Muslims. But unfortunately due to lack of research studies we do not know much about the social martix and cultural dynamics of the Bengal Muslims. The paper is based on facts gathered from primary and secondary sources. It is the product of empirical research on the subject with which the author has been engaged for more than two decades.

ISLAM AND MUSLIMS AND INDIA

The word Islam derived from the Arabic root "SLM", means peace, submission and obedience. In religious sense the word Islam means submission to the will of God *(Allah)* and the obedience to His laws. The great tradition of Islam is founded on a world view which is apparently non-hierarchical, egalitarian and historical in ethos. Islam is oriented towards holistic principle in its conception of social and cultural order. Thus, Islam is not only a religion but a complete way of life. The followers of Islam is known as Muslims.

During early part of Seventh Century, the new monotheistic religion of Islam emerged in Arabia. Prophet Muhammad (PBUH) was the founder of this religion. The message of God as revealed to the Prophet is noted in the Holy book *Quarn.* The entire life, words and deeds of the prophet recorded by his followers in another book(s) called *Hadit.* Islam emerged as a reaction against exploitation in the land of Arabia and played a vital role

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in reform and revolution of the Arab Society and culture of that time. Though Islamic tradition is based upon non-hierarchical world view with monotheistic ideology and its followers abiding the common code of conduct applicable to the peoples of all colours and creed, yet pluralism has gained impetus, as it never remain confined to a region for long. Islam spread from Arabia to other countries in various phases of history and thereby adjusted with the local situations.

The spread of Islam in India is very interesting one. India has a very age old contact with the Arab world, The Arabian preachers, Central asian traders and the Muslim rulers played a very significant role to spread Islam in Indian Sub-continent. The commercial relations between Central asia and India, the religious mendicants (saints), the various Muslim invasions followed by continuous Muslim rule in the country, the immigration of people from various parts of Arabia, Central asia and neighbouring places and finally the conversion of the local people into the fold of Islam facilitated the spread of this religion in India. Various social, religious and political causes are considered for the growth and spread of Islam in various parts of this country. Islam spread and propagated in India mostly between eighth to seventeenth centuries.

Bengal's contact with the Islam and the foreign Muslims specially in the field of trade and missionary activities began much earlier than its conquest in the thirteenth century. Many Muslim scholars and Sufi saints are believed to have come even before conquerors. To spread Islam in Bengal the activities of the former were no less significant than those of the latter. In Bengal Islam expended mostly in rural areas, while in other parts of the country Islam was mostly spread in urban places (De: 1974; Islahi: 1978; Imam : 1987; Levy: 1957, Sarkar:1972, Wolf:1951).

MUSLIM POPULATION INDIA

Muslims about 25 percent of the world's total population and India has the second largest Muslim population of the globe. Out of 1000 mullions of world Muslim population 100 millions live in India. According to 1991 census, total Muslim population in India was 101,546,057 (12.12%), of which 52,631, 365 were males and 48,964.692 are females. The sex ratio of Muslims was 930 females per 1000 males.

The Muslims population is spared over the length and breadth of the country in all the states and Union territories in various frequencies. Maximum concentration of Muslim population is found in the state of Jammu and Kashmir (64.19%) and the Union Territory of Lakshadweep and its neighbouring Islands (94.31%). The lowest percentage of Muslims are found in the states of Mizoram (0.66%) and Sikkim (0.95%). About 74 percent of the Muslims of this country reside in three states namely Assam (28.42%), Kerala (23.33%) and West Bengal (23.61%). Over 55 percent of Muslim population of India reside in the states of West Bengal (23.61%), Uttar Pradesh (17.33%) and Bihar (14.81%). The states and Union territories where Muslim form 5 percent. Less than national average of 12 percent are found Andhra Pradesh (8.91%), Gujrat (8.73%), Kanataka (11.64%). Maharastra (.69%), Manipu (7.27%), Rajasthan (8.01), Delhi (8.91%), Andaman and Nicobar Islands (7.61%), and Pondicherry (6.54%) as per 1991 census. In Arunchal Pradesh, Himachal Pradesh, Nagaland, Orissa, Punjab, Sikkim, Candigarh, Dadra and Nagar Haveli, their population is between 1 to 3 percent of the total population. And the rest of the states have above 3 but less than 5 percent of the total pupulation. The widespread distribution of the Muslim

population through out the length and breadth of the country clearly indicative of the fact that it has grown mainly out of indigenous population. (Mondal:2000, Siddiqui:1998).

BENGAL MUSLIMS-ASPECTS OF THEIR SOCIAL ORGANIZATION

The idea of homogeneity and equality among the Muslims was practiced during the initial state of the rise of Islam in Arabia. But in successive stages the homogeneity and equality of Islamic society has to face a serious challenge due to its contact with the plural societies and the complex cultures, like in India. When Islam reached to India the concept of equality, homogeneity and brotherhood only remained an ideal one as the Muslim society in this country is characterized by various social groups which exhibit a clear trend of diversity in social customs.

In this section, the system of social segmentations and patterns of social groupings among the Muslims has been discussed. In course of discussion the features among Muslims of India in general with Bengal in particular are highlighted. Through empirical studies it is noted that the Muslim population is significantly divided into certain social groups of varied backgrounds. The groups among the Muslims may be considered as macro as well as micro units of the society. The macro units of the Muslim society are based on the theological schools, sects and sub-sects, *Khanaha* and *sisilas*, history of descent, ethnicity and social status of the people which are operating at the wider level. Beside macro grouping, the Muslims, are also segmented into several smaller units like kinship, neighbourhood and local community. These smaller groups among the Muslims are the micro units of the society as these are localized and their features are typical to the people living in specific region. The nature and character of these groupings are described below.

The empirical study among the Bengal Muslims revealr that despite the equalitarian ideology of "Islamic brotherhood" the Muslims of this province are segmented into various orders at macro and micro levels. At macro level, firstly, the Muslims are segmented on the basis of various schools of theological jurisprudence (*majahaba*). There exists two major Muslim groups on the basis of *Majahabs*. These are *Hanafis* and *shafeis*. There is a sharp difference between these two groups, particularly in regard to *ijma* (consensus). The *Hanafis* reject the concept of *ijma, while* the *Shafeis* accept it as valid. Each group maintains its social boundary through limiting social contacts with members of other group. These two groups are endogamous and they built up their respective mosques to pray *namaj*. However, inspite of their jurisprudential differences, the *Hamafis* and *Shafesis* are interacting with each other in their day to day life for various social needs.

Secondly, the Muslims are divided among themselves into certain sects and sub-sects. Three major sects have been identified among the Bengal Muslims. These are *Sunni*, *Shia* and *Ahel-e-hadish*. The *sunnis* are unmerically dominant in this province and they are further subdivided into two main sub-sects. These are *Barelvis* and *Deobandis*. The *Sunni Barelvis* show the highest degree of assimilation of little traditions and they are also least critical in continuing the traditional (Pre-Islamic) customs and rituals. They are well integrated with the local society of Bengal. While the *Sunni-Deobandis* are willing to differentiate them from the *Barelvis* by virtue of their involvement in missionary works and activities of puritan nature. Actually their main goal is to strengthen the process of Islamization among the Muslims masses. Though there are differences of opinion between *Barelivis* and *Deobandias* in matters of social customs and religio-ritual practice, yet they interact with each other

in all matters of day to day social life. The sectarian affiliation of Muslims also cuts across various social boundaries among them, like ethnic (*jat*), and class divisions.

Thirdly, the Muslims are segmented on the Basis of their affiliation and association with the various spiritual (*Tariqat*) orders, based on *Khanqah* and *Silsilas* i.e. saints and their schools of thoughts. Around *Khanqah*, there exists two fold divisions of the people *viz. Pir* (Saint) and *Mureed* (disciple). The *Mureeds* of a common *pir* are known as *pir-bhai*, who have some duties and obligations to each other. Various social problems among *Mureeds* are generally solved by their respective *pirs*. The *pir-bhais* are related to one another through their clientship to a common *silsila*, and this helps them to interact with each other in various social contexts. Interaction among the *Mureeds* of different *Khanqah* is also not uncommon among the Muslims. The belief in pirism among Muslims is identical with the *guruism* among the Hindus. The *Pir-bhais* among the Muslims and *Gurubhai* among the Hindus among the Hindus are also identical in character. Belief in spiritualism (*tariquat*) among Muslims cut across various social boundaries among them. A notion of social inequality exists among the Muslims around affiliation to different spiritual orders and *pirs*. Muslims of higher social status usually associate themeselves with some famous *Khanqah* of distant places. Whereas the commoners who enjoy lower social status affiliated to the *Pirs* and *Khanqahs* of their locality which are not very renowned one. A notion of superiority complex among the *Mureeds* over the *non-Mureeds* has also been very often noticed among the Muslims.

Fourthly, the Muslims are also segmented into various groups on the basis of their ethnic identity and social status and which are arranged in stratified order. The traditional informal system of social stratification among the Muslims of Bengal is division of people into several *jats* and social categories on the basis of social honour through place of origin, ethnicity, descent and degree of distance from original converts. Besides *jat* categories, there are many occupational groups among the Muslims. Inequality in social position on the basis of traditional occupations is also noticed among Bengal Muslims. Maintenance of group identity on the basis of social boundary through endogamy, and limited social interaction in various spheres of social life among the Muslim groups is very conspicuous one. All these facts reveal the "caste like" characteristics among the Muslims. The differences that emerged among Muslims in this context is between the descendants of the so-called "foreign ancestors" and the "indigenous converts". The former segment is called as *khas* or *Asfar*, while the letter is known as *Aam* of *Ajlaf* or Atraf. Those who called themselves a as *Khas* are the gentry section and considered them as aristocrat or *Aaimadar*. They are the land owners, civic or religious leaders and comparatively wealthier. The *Khas* or *Asraf* constitute the elite category of the Muslims. They are further subdivided on the Basis of their ethnic and place of origin. Among them there are four major groups viz.*Sayyad, Shaik, Mughal* and *Pathan*. The *Sayyad* and *Shaik* are beliveved to have descended from Arab ancestors. While Mughal and Pathan are claimed to have descended from *Mughal* (Mongal) and *Afgan* conquerors. But people of *Ajlaf* or *Aam* category are the toiling masses and peasants, therefore, could not lay any such claim of noble ancestry. There are several occupational groups among the Muslims of *Ajlaf* category. Social gradation amongst the Muslim occupational is groups also noticed. Actually the social gradition among the *Ajalaf* occupational groups is determined by their past caste characteristics. At the bottom of social ladder there are those Muslims who do scavenging, sweeping, and such other unclean jobs

are commonly referred as *Arzals* or *Raizals*. It is estimated that more than two-third of Muslim population belonging to *Ajlaf* and *Arzal* categories are considered to be marginalized in their social position. Owing to impact of the notion of nobility among the *Asraf* and caste back-ground among the *Ajlaf* and *Arzal,* the segments of Muslim society are generally arranged in stratified order. Although Islam does not recognize any caste differentiation among its adherents, but several categories of Muslims belonging to *Ajlaf* and *Arzal* sections have traditionally been treated as 'low castes' i.e. *nichu-jats* in their occupations and and in matters of social relations. It is also to be noted here that, the traditional social gradation among the Muslims on the basis of place of origin, ethnic identity and traditional occupation has been changing in recent times and which has been replaced by "status group" and "class-like" divisions among them. The most popular emerging "status groups" among the Muslims in Bengal are *Miya* (well to do), *Garosthi/Chhasa* (poor) and *Kamina/Itar* (degraded/fallen). The emerging status groups among the Muslims are also ranked in stratified order in terms of their social position. There is very limited social interaction among the Muslim people of various status categories as each them occupies a difinite position in the social ladder. Many of the marginalized Muslim groups who belonging to traditional *Ajlaf* and *Arzal* categories or emerging *Garosthi* and *Kamina* status categories are now awakening and organizing movements for social equality-They called themselves as OBC Muslims. In 1980 the Mandal Commission considered 90 percent of Muslim population in India as backward and declared 92 Muslim groups as OBCs. In west Bengal, there are Muslim groups who are known as OBC Muslims of the state.

The pattern of social stratification among the Muslim clearly reveals that the traditional *jat* distinction is more ascribed and closed system, while the emerging status group having class like inequality is achieved, flexible and open in characters. The structure of traditional *jat* stratification developed in the background of feudal circumstances where as the emerging pattern of status group distinction is an out come of changing situation. However, inspite of separate social boundaries, various Muslims groups interact with one another in economic, social, political and cultural contexts, in their day to day life as well as in ceremonial occasions. This enables them to cut across ethnic, social and class boundaries.

Beside above groupings among the Muslims, they are also segmented into some smaller units like kingroup, neighbourhood and local community. The structure of Muslim kinship is constituted by *a* set of kin categories. Broadly there are two set of kins i.e. *Khandan* and *Kutumb* or *Meheman.* So far the groupings and relationships are concerned, the members *of Khandan* and *Kutumb* are further sub-divided into several clusters. The members of *khandan* or lineage (consanguinal kins) are divided into *Parivar* or *Ghar* (family), *Bhaiad* or *Da-deiji* (minimal lineage) and *Gusti* or *Bangso* (maximal lineage). And similarly the *Kutumbs* (affinal kins) are categorized as *Baper-kutumb* (fathers side), *Maer-hutumb* (mothers side) and *Nejer Kutumb* (one's own side). The inter-relations and interactions among the members of *Khandan* are basically face to face, intimate and informal. They closely interact in their day to day/ as well as in ceremonial occasions. Where as the pattern of relationship and interaction among the *kutumbs* is mostly formal and occasional.

The neighbourhood *(paris)* occupies the most important position in structure and organization of the Muslim society. It is an another dimension of social interaction among the Muslim people other than their kin tils. The neighbourhood is considered as the smallest clement of *umma* (brotherhood) among the Muslims. The neighbourhood relations are

developed on the basis of physical proximity, sense of belongingness, fellow feeling, solidarity, and mutuality. The interactional pattern among the members of neighbourhood is both informal as well as formal, which is mutual and co-operative in character There exist well defined organisation to look after the various socio-religious issues of the residents of a neighbourhood. The informal council of neighbourhood is *para-majlis* on *Matat-majlis* or *mohollah-majhs.*

The local community or *solo-ana* is constituted by the residents of the neighbouring villages is also a very important unit of integration among the members of Muslim community at the base level. It is the amalgamation of many neighbourhoods *(parti)* of a locality. The members of local community not only co-operative in economic, political, social and ceremonial contexts, but also reinforce the relations among them as members of the same community at Ihe local level. Thus the individuals of the local community behave as a micro-unit of Muslim *Umma* by developing a close relation of fraternity, co-operation and interdependence for various social and religious needs. The interactional pattern among the members of local community is basically formal in character. The local community is organized through its own council termed as *Saloana-majlis* or *Grumi-majlis* or *Gram Salisi Majlis.*

There are structural and functional overlaps i.e. fusion among various components of social segments in Muslim society at the micro level. For example, in case of necessity, the *parivar* (family) merges with *Bhaiad* (minimal lineage) and which in turn also unites with *Khamtan* (maximal lineage). Likewise, *Khandan* (lineage) merges with the *Parts* (neighbourhood) and which is again relates to *Solo ana* (local community) for various purposes. The extent of this horizontal fusion of social segments is the fundamental feature of social organization of the Muslim society at the base level. (Ahmed : 1973, Ahmed 1981, Ansari : 1960, Mondal; 1994, Siddiqui : 1974).

SOCIAL MOBILIZATION AMONG THE BENGAL MUSLIMS

Islam spread in Bengal due to contact, conquest, and conversion through middle eastern traders, rulers and *Sufis* or *Pits*, In course of conquest and conversion, the great tradition of Islam underwent a significant modification due to adjustment with the local cultures and forces of change that had emerged from time to time in this region. In the process of culture contact there were always mutual cultural adjustments. As a matter of fact, Islamic tradition in Bengal existed side by side with the local Hindu traditions without losing its basic identity.

In matter of way of life, initially the *Asrafs* used to maintain the traditional orthodox customs of the place of their origin for maintaining exclusive identity through certain social mechanisms. Likewise, the *Ajlafe* who were converted from local society, continued to retain many of their earlier pre-Islamic customs and traditions. However, due to close association with the Bengal society, the *Asrafs* gradually acquired the local customs from the *Ajlafs.* Under such a condition there were certain significant modifications in the great tradition of Islam in Bengal. On the whole, the great Islamic tradition, which was borrowed from outside, did not face a serious trouble to propagate in Bengal. The reason is that the Islam did not want to alter the basic socio-economic structure of Bengal society. The cultural synthesis between Hindus and Muslims which emerged in the medieval era had attracted the attention of orthodox religious leaders of the Muslim community who stood against it for socio-political reasons. The emergence of orthodox culture pattern in Muslim society

commenced in the later phase of eighteenth and early phase of nineteenth centuries. The religious leaders of such a orthodox ideology called for Islamization of the Muslim masses for removing their so-called un-Islamic and extra-Islamic practices. This was the beginning of first religio-revival movement among the Muslims in Bengal.

The Muslims of upper stratum i.e. the *Asrafs* enjoyed privileged and politically dominant position in Bengal from thirteenth to seventeenth century. They controlled army and administration. While the *Ajlafs* were the peasants engaged in agriculture, craft making and some other occupations to serve the local needs. On the other hand, land, trade and commerce were under the control of Hindu higher castes. As the Muslims were enjoying enough facilities in administration and politics, the dominant position of the Hindus in business sector did not disturb the communal peace. But with the gradual and rapid expansion of British power, the entire situation was drastically changed. As the British altered to the administrative as well as economic structures, the Muslims lost their pre-eminent position under the British rule. This lead to the development of a new type of personality among the Muslims, which resulted in seclusion and isolation of the community from the changes those emerged at that time. The life of the Bengal Muslims was almost stagnant due to their association with the decaying feudal structure and their obedience to orthodox religious elites *(Ulemas* and *Mullahs)* who were under the spell of tradition.

During British rule the Muslims as a whole faced serious socio-economic problems due to their negligence of the situational reality. They did not accept English education and western value system of capitalism and materialism for fear of losing their so-called cultural identity. The notion of such a character was propagated among them by the orthodox religio-political leaders of that time. On the other hand, the Hindus found no difficulty in finding satisfactory adjustment with the British power. They easily took up English education instead of Persian and were employed in mercantile houses and administration. They also participated in modern trade, industry and banking. The Hindus had also shown considerable social mobility during this phase due to works of social reformers who initiated Renaissance in Bengal. But due to absence of rational outlook of Muslim leadership the community was deprived of Renaissance that forced them to develop a unique personality in mailers of a adjustment with the changing situation. The gap between Hindus and Muslims in matters of resource competition was gradually emerged due to this uneven development. As a consequence, during this phase, the Muslim community lost more and more of its earlier liberal tendencies and its place. Orthodoxy and revivalism became their precoccupations.

For breaking the stagnation of Bengal Muslim's during the British rule two solutions emerged. The reactionarists advocated for seclusion and isolation *of* Muslims from the thrust of westemization. Thus they called for Islamization of the Muslim masses. While the liberalists progressivists advocated for modernization among Muslims for situational adjustment of the community under the British empire.

In order to emancipate the Muslims from degeneration, the traditional *Ulemas* launched various religious reform movements (Farazi, Wahabi, Ahl-e-Hadish and Tayyani etc.) of orthodox nature. Consequently during eighteenth and nineteenth centuries, vast areas of Bengal were affected by these movements. The movements were basically religious in character but gradually acquired the socio-economic programmes.

In religious sphere the movements strengthened the process of Islamization among

Muslim masses. And in the politico-economic spheres the movements stood for defending the economic and political interest of the local *Zamindars* and British administrators. The revivalists not only asked for reform of religious and social customs, but also generated a political consciousness among the Muslims. Thus the movements were not only the religious revivalism but the peasant movements too. In nineteenth century Bengal, various pulls of religious reform movements of the Muslims began to polarize into two major camps i.e. orthodox and millitant on one hand and peaceful liberal reform on the other. In this context, it is necessary to mention the religio-political movements of Titumir (1931) and religio-social movements of Karamat Ali those had a very serious impact on religious, social, political and economic life of the Bengal Muslims. The British suppression of various socio-religio-political movements made the Muslims more secluded and isolated in all manners.

Traditionally *Maktabs* and *Madrashas* were the main institutions through which the process of Islamization was cultivated among the Muslims. These institutions followed the traditional path of learning through Arabic and Parsian languages and placed much more emphasis on Muhammadan Laws and jurisprudence. The basic goal of *Madrashs* was to impart the Islamic education snd also to establish contact between religious leaders and the common Muslims for organizing the people to maintain their religious and cultural identity. The organizers of *Madrasha* education neither realize the importance of English language nor they give any importance to learn scientific subjects. However, the situation started to change in successive stages.

Due to slow acceptance of western (English) education the middle class in Bengal Muslim society could not be formed until the middle of nineteenth century. Being influenced by Sir Sayed's reform movement at Aligarh, during later half of nineteenth century, a small section of English educated Muslims began to realise what went their community. In Bengal, Moulavi Abdul Latif, Kazi Abdul Bari etc. wrong with played a major role in awakening their own community members. They keenly felt that the Muslims must participate and adjust with the economico-socio-political situation, which emerged under British rule. To cultivate the process they founded an association named Calcutta Mohammedan Literary Society (CMLS) in 1863. The organizers of the association worked for the spread of English education among the Muslims along with the traditional Islamic education in *Madrasha.* Their effort was more in the field of social and cultural affairs and less in Political matters. Their activities were mainly confined among the members of upper class Muslims living in Calcutta and other towns of Bengal. Thus for obvious reasons only a small section of urbanized muslims were benefited through it and a vast majority of *Ajlaf* Musilims of rural Bengal were away from the benefit of its activities.

After CMLS, another group of Calcutta Muslims. formed a separate association named Central National Muhammadan Association (CNMA) in 1878, the leading spirit behind this association was Sayed Amir Ali, The organizers of this association were professional men, government officials and men of middle class. The association worked as a democratic body, it established contacts with the Muslims of different districts in Bengal and also of urban and rural areas of the province. The association had branch offices in the name of Anjumans. The association mainly devoted its activities towards social and educational aspects of the Bengal Muslims. It also maintained a friendly relationship with the Hindus. Its basic goal was to organize the Muslim masses in a way that they can be receptive to modernization.

But unfortunately for various reasons, the early activities of the association had lost its tempo by 1980s.

The gradual loss of vitality of CMLS and CNMA motivated a few other Muslims to work for their society. In 1886, the Muhammadan Reform Association (MRA) was formed by the men of legal profession who published Muslim Chronicle and highlighted the Muslim issues and problems. This association was basically devoted to welfare of the Muslim community by all legitimate means. The social situation of Bengal Muslims in colonial era, particularly the status of women, draw the attention of a scholarly woman named Begum Rokeya Shakhawat Hussain. She organized a movement for women's education and social reform during first half of the twentieth century. She was the advocate of Muslim women's education of her time.

Due to effort of all, the above associations of the traditional Bengal Muslim society was gradually started to change towards modernity. A new middle class emerged in Bengal Muslim society by the last quarter of nineteenth century. From this incipient middle class, a neo-political elite section was also emerged. But due to poor spread of English education among the Muslim masses, the growth of middle class and neo-political elite sustained a set back and remain confined among the rich and well to do Muslims of *Asraf* category

Since the factor of English education was the most important in determining the position of middle class and neo-political elite, the Hindu community had undergone such an orientation much earlier than the Muslims. From the beginning of nineteenth century, the progressive section of Bengali Hindu Community passed through a series of social reform movements under the leadership of Raja Rammohun Roy, Vidyasagar, Kesabchandra Sen and many others. However the movements of such a progressive nature was not started by Muslim intelligentsia for several socio political reasons. The difference between the Hindu and the Muslim intellectual elites of the nineteenth century Bengal was also noticed in their approach to Bengali language and culture. Since the Hindu intelligentsia of Bengal emerged from the local soil, they used to cultivate Bengali along with the English. While the major portion of Muslim intelligentsia belonged to the *Asrqf* category who preferred Urdu in lieu of Bengali as a mark of social honour within the community.

Due to failure in competition with the Hindus in mutters of economy and politics and also for other reasons the elite section among the Muslims started to maintain their exclusive identity. This affected the growing process of integration among these two communities. By that time the emergence of revivalists of both the communities further aggravated the bitter relations between the two communities.

During the late nineteenth and early twentieth centuries when the concept of nationalism was in motion, a sizeable section of Muslim population in Bengal participated in the freedom movement along with the Hindus. But during this phase, the attitude of the extremist group of congress towards Muslims on leadership question was very critical one, which soured the political minds of the Muslims further. Under such a Circumstance a section of Muslim political elite developed a political organization of their own named Muslim League in 1906. During the phase of Indians freedom movement, the Bengal Muslims were divided into two major political trends like Secular nationalism with anti-partion strategy under the leadership of Indian National Congress and Muslim Nationalism with pro-partition tendency set by Muslim League.

The birth of Muslim League introduced a new era in socio-political life of the Bengal Muslims. Consequently the growing process of integration among the Hindus and Muslims received a serious set back. Finally, the partition of Bengal greatly affected the growth of educated middle class in Muslim society, when a good number of them migrated to East Pakistan (now Bangladesh) This created a great vacuum in the rising middle class and its leadership in Muslim society of Bengal.

The above situation started to change after independence of India. Like other parts of the country, the Bengal Muslims irrespective of this ethnic, social and class position, gradually participated in developmental process of the nation. But for various reasons, the impact of the change among them are not very significant one. The historically emerged incipient Muslim middle class is still suffering for its healthy growth. Owing to the lack of expansion of middle class and also due to insignificant and egocentric role of the emerging noe-political elite the modernization of Muslim society as a whole has been suffering. Even in contemporary times the elite structure in Muslim community and also the authoritarian role of traditional religious leaders have not been significantly changed. This has created a social atmosphere which enhances the growth and activities of the traditional elites *(Ulemas* and *Mullahs).* They are still controlling the masses by virtue of their hold on them, Thus the contemporary Bengal Muslim society has been passing through a transitional phase. On one hand, there is a small section within the community who are in the path of modernization, while on the other hand there is a large section who is still motivated by the tradition. The self-imposed isolation which was the characteristic of Muslim society during the colonial era, still continuing to a certain extent as a result of fear psychosis, minority syndrome, and over all socio-economic backwardness. The spread of communal politics followed by frequent communal riots in the country further aggravated the situation from which the Muslims are unable to come out for obvious reasons. However, the situation of Bengal is something different and unique one. The progressive outlook and the leftist liberal political atmosphere of Bengal somehow maintained a communal peace and harmony in the state. This enable the Muslims of all social strata to change their traditional socio-cultural condition to a certain extent. But still several constraints to change towards modernity and development of the Muslims. (De : 1974, 1982; Engineer : 1985; Hasan; 1975; Mondal: 1988; Mondal and Begum : 1999; Nazrul Karim : 1980; Singh ; 1973).

CONCLUDING OBSERVATIONS

The facts presented in the foregoing pages clearly reveals that the Islam as a religion and a way of life has a definite and well defined concept of society and culture. The ideal society which is set by Islam is egalitarian, democratic, wholitic, and dynamic in characters. But in course of history, Islam has acquired an adaptive spirits as it never remain confined to a particular region. Thus pluralism has gained impetus in Islam when it spread from Arabia to various parts of the globe owing to adjustment with the local situations

The relationship between Islam and India is a very old one. There are various economic, political and socio-cultural reasons behind the spread of Islam in India. When Islam reached to India it had to adjust with the multiple little traditions of the country and there by acquired a unique character. Islam made a significant contribution on Indian society and culture but the reverse is also true. The followers of Islam in India i.e. the Muslim constitute 12 percent of country's total population. They are living in all states of the country in varied numbers

and represent diverse customs and traditions inspite of their common characteristics as members of sdme religion.

Nearly one fourth of the Indian Muslims live in Bengal. The Muslims of Bengal adhere to basic principles of Islam and also follow the local traditions of the place. The Bengal Muslims are mostly inhabiting in rural areas. Their wide spread distribution in rural hinterlands is indicative of the fact that it has grown out of indigenous population. Like in other parts of the country, a larger concentration of Muslim population in Bengal fall in the category of low income group, live below the poverty line and lag. behind education. As a matter of fact they arc considered as very tradition bound.

The social organization of the Muslim community in Bengal is characterzied by concrete social divisions of varying types with complexities of relations and interactions with one another. Therefore, in spite of egalitarian teachings of Islam, various segments have emerged in Muslim society both at macro and micro levels. At the macro level the units of the Muslim society are sects and subsects. *Pits* and *Mureeds,* ethnic groups *(Jats)* and status groups etc. And at micro level the Muslim social units are kinship, neighbourhood and local community. All these facts suggest that the social organization of the Muslim community is characterized by concrete social groupings of varying types. Therefore, it is observed that, in spite of egalitarian teachings and social homogeneity of Islam, various segments have emerged in the Muslim community both at macro and a micro levels. At macro level, various social units have been formed within the Muslim society owing to varied interpretation of theological/jural *(Shariat)* and spiritual *(tariqat)* aspects of Islamic great tradition. Further, the units have also been emerged out of basic social groupings of the people on the basis of ethnic, descent, status and other social backgrounds. Similarly, at the micro level the units are formed due to degree of distance among the kinsmen and also among the neighbours. Various units of the Muslim society are not the isolable components. Moreover, there are structural and functional overlaps amongst those segments both at the macro and the micro levels. The functions of this social framework are adaptive in its external and integrative in internal aspects. Further, the social stratification and social inequality which is observed among the Muslims, is a situational development both for adaptive purpose and also for functional necessities to operate within the larger frame work of greater Indian society. This feature is inconsistent with the egalitarian norms of Islamic social order. Therefore, it is seen that, there is a gulf of difference between the text (Islamic ideology) and the context (the practices of the Muslims), Thus the social organization of the Muslims is determined by some traditional values and customs.

The analysis of social mobilization of the Bengal Muslims very clearly shows that Islamization was favoured and extensively followed by the masses. As a result, the process of modernization received a set back. The various forms of social movements have extended the path of Islamization for integrating the members of the Muslim community on one hand and to protect them from the forces of westernization/modernization on the other. The process of Islamization is an age old phenomenon among Muslims not only in Bengal, but also in India and World at large. Islamization in the form of solidarity movement has reinforced communal, cultural and political consciousness among the Muslims. In economic and political arena it has provided a good bargaining media, while in socio-cultural sphere it has generated an integrative symbolism leading toward ideal monolithic Islamic

community. All these generated a social and cultural exclusiveness among the Muslims. The process of Islamization contributed a greater conservatism among them and increased the holds of religious elites amongst the Muslim masses.

The conventional process of Islamization by less educated religious leaders extended the path of traditional and orthodox religious revival movements. As a result, the cultivation and propagation of liberal Islam as well as Islamic modernization by way of *Ijtehad* (reinterpretation of Islamic prescriptions under new situation) is very fare from their consideration. Though in Islamic ideology there is no place of blind imitation yet Islamization has never been able to break away the conservative attitude of the Muslims. Under such a situation, the Muslim society is unable to organize a strong social reform movement or renaissance on secular and modern direction. But what is very important to note that, due to several forces of change, the Muslims today are also forging a new identity by participating in developmental process of the country. To sustain this process the government and non-government organizations (NGOs) should come forward to help and co-operate with the Muslims for strengtheing their endeavour.

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SIGNIFICANCE OF BONE RUBBLE IN FORENSIC ANTHROPOLOGY

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Abstract: All through examination of skeletal material, recovered from a scene of crime, the forensic anthropologists often come across broken pieces of bones in addition to complete bones. Prior to 1935 these bone fragments were almost disregarded by the scientists assuming that no pertinent information could be extracted out of them. Muller (1939) paved a method by measuring these fragments to reconstruct bone length. Bone length thus obtained could in due course be used to reconstruct stature of the deceased from broken bone pieces. Following this technique plentiful studies have been carried out all over the world to aid the identification procedure. A good number of the earlier studies incorporated only linear dimensions of the bone fragments for this purpose. During the past decade or so other dimensions like transverse, sagittal and circumferential have also been used to formulate prediction equations for reconstruction of bone length. The present study carried out on 245 Humeri and 230 femora reveals that the three dimensions of the head, i.e. transverse diameter, vertical diameter and the circumference of the head display moderately high correlation with the respective bone lengths like other linear and transverse dimensions of the bone shaft and the lower end. It is also revealed that out of these three measurements the circumference of the head has the highest correlation with the bone length coupled with relatively low standard error of estimate and thus could provide the most consistent estimate of the humeral and femoral lengths. It may be concluded from the results of this study that the bone fragments, especially the upper end. If recovered from a crime scene, are reasonably vital in providing a near accurate length of the concerned bone and that the bone fragments have a momentous application in the process of identification.

INTRODUCTION

Forensic Anthropology according to Snow (1973) pertains to "the application of physical anthropologists committed knowledge of human sexual, recial, age and individual variation to the problems of medical jurisprudence" While Stewari (1979) is of the belief that it is "that branch of physical anthropology which for forensic purposes deals with the identification of more or less skelatonized remains known to be, or suspected of being human. Beyond the elimination of non human elements, the identification process undertakes to provide opinion regarding sex, age, race, stature and such other characteristics of each individual implicated as may lead to his or her recognition" his definition confines the scope of forensic anthropology to the identification of human skeletal remains in contrast to the other which includes non skeletal aspects as well.

The identification of skeletal, badly decomposed or otherwise unidentified human remains is significant for both legal and humanitarian reasons. Forensic anthropologists apply standard unequivocal techniques of physical anthropology to identify human remains to assist the process of identification. They assist the investigating team in locating and recovering evidence and work to suggest the age, sex, race, stature and other unique features of a decedent from the skeletal remains (Nath and Sehgal, 2003). They often work in

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concurrence with forensic pathologists, odoniologists and homicide investigators to identify a decedent.

Estimation of living stature from skeletal remains is an important feature of forensic anthropology, which has attracted attention of numerous researchers all over the world as the estimated height of the deceased obtained from the long bones do help in providing an approximation of the ante mortem height of the person. Since 1888 till date researchers have formulated means of stature reconstruction from skeletal remains and have succeeded in achieving a high degree of exaciness.

Contrary to the use of complete long bones for estimation of stature, sex and age, the broken places of long bones were at the outset disregarded by the investigation officers on the squabble that no relevant information could be extracted out of them. The bone fregments found at the crime scene were considered of no use and thus infrequently collected as evidence till 1935 when Muller devised a method by measuring cartain linear segment lengths of humerus, radius and tibia to formulate means for reconstructing respective bone length. The bone length, thus, estimated could be used to reconstruct stature. The estimated stature using this method would enhanced standard error of estimate (SEE) because of double prediction.

To surmount this limitation Steele and McKem (1969) modified Muller's method by first replacing radius by femur and then formulating an equation based on the direct correlation of the linear segment lengths with stature as well with the bone length. By adopting this method the standard error of estimate declined and a more accurate estimate of stature was obtained. Steele (1970) modified this method for prediction of stature directly from the linear segment lengths of humerus, femur and tibia. Chandra et al. (1966) used certain measures of femur to reconstruct femoral length while Chandra and Nath (1985) used a single transverse measure of humerus and femur to reconstruct the respective length of both the bones. Mysorekar et al. (1980, 1982, 1984) used certain dimensions of humerus, redlus, ulna, femur and tible to formulate regression formulae for reconstruction of respective bone lengths. Gupta and Nath (1996, 1997 a & b) also reported on the prediction of bone lengths using linear segment lengths while Badkur and Nath (1989, 1990 a & b). Nath and Badkur (1990, 1993), Nath et al (1999), Nath (2000), Nath and Gupta (2001) and Datta and Nath (2001) integrated multiple dimensions (linear, transverse, sagittal and circumferential) of different bones to reconstruct both bone length as well as stature from the bone fragments. One of the main purposes of these researchers was to incorporate more and more measurements of the long bones to observe as to which measurements could provide better estimate of stature and bone length from the bone fragments and thus proving the importance of the broken bone places in extracting some information that could lead to the positive identification.

Certain researches proved that the transverse dimension of the bone fragments exhibit greater correlation with the bone length while certain others were of the opinion that the circumferential dimensions are better. In this process almost every part of the long bone was considered but for the head portion of the humerus and femur.

In the present study an endeavor has been made to reconstruct humeral length and femoral length on the basis of three head dimensions, namely vertical diameter of the head (VDH), transverse diameter of the head (TDH) and circumference of the head (CH).

MATERIAL AND METHODS

A total of 245 Humeri (120 right and 125 left) and 230 femora (120 right and 110 left), fully ossified and completely dry were measured for the three dimensions of head, i.e. transverse diameter of the head (TDH), vertical diameter of the head (VDH) and circumference of the head (CH), besides maximum length (ML) in accordance with the standard measurement techniques recommended by Martin and Saller (1959). All the bones were measured from a variety of medical institutions of Delhi. As no documentation regarding the sex of the bones was available, thus sex differences in these measurements could not be assessed. Data were consequently subjected to statistical treatment to assess bilateral differences and to correlation analysis for formulation of regression equations for prediction of bone length from these measurements.

RESULTS AND DISCUSSION

Data on all the four measurements pertaining to humerus and femur were subjected statistical analysis to obtain mean, standard error of mean, standard deviation and t-test to examine the bilateral variation in these measurements if any.

Table-1 presents the basic statistical constants for the measurements of humerus besides the values of the t-test. It is perceptible from the table that the right side bones show evidence of greater dimensions for all the measurements than the left ones. The differential trends as assessed through t-test divulge non-significant bilateral differences for all the measurement and thus the side (right and left) were pooled for further analysis.

Basic statistical constants for all the measurements of femur along with the value of t-test are listed in table-2. It is pragmatic that maximum length (ML), transverse diameter of head (TDH) and circumference of head (CH) of the right side femora are greater than the left ones but in case of vertical diameter of the head (VDH) the left side bones demonstrate greater dimension than the right ones. These perceptible variations reveal a non significant bilateral difference when subjected to t-test. Owing to non-significant bilateral variations in all the four measurements of femur the data on right and left sides were pooled for further analysis.

The pooled data for both the bones were subjected to correlation and regression analysis to initially observe the extent of association between these measurement of humeral and femoral head with the respective length of both the bones and secondly to formulate regression equations for calculation of bone lengths from these proportions.

It is observed that CH exhibits the maximum correlation (r=. 673) with humeral length followed by VDH and TDH (r=. 649). The SEE works out to be least for CH (1.35 cm) while for VDH and TDH it comes out to be (1.40 cm). It may be inferred that the best estimate of humeral length may be obtained on using CH in contrast to VDH and TDH as it not only exhibits the highest corriation with humeral length but also reveals least standard error of estimate (SEE) as well. Thought the variation in the values of correlation and SEE for TDH and VDH in comparison to CH is not of very high order, thus both these dimensions could also be used for estimating humeral length with reasonable accuracy.

In case of femur a similar trend is observed as in case of humerus, CH correlates outstandingly with femoral length (r=. 813) followed by TDH (r=. 797) and VDH (r=. 715). The SEE in case of CH is lowest (1.50cm) followed by TDH (1.66cm) and VDH (1.87cm).

It is obvious from the three regression equations that the pre-eminent prediction of femoral length is accessible through the use of CH as against TDH or VDH. But incase of need both these dimensions could be used to estimate femoral length.

Results of the present study are not analogous with the earlier studies, as earlier researchers have not used these proportions of humeral and femoral head. Though many studies have reported a similar degree of association between maximum bone length and other fragmentary bone dimensions pertaining to linear, transverse or circumferential categories (Chandra et al, 1966; Mysorekar et al, 1980; 1982; 1984; Badkur and Nath, 1989, 1990 a&b; Simmons et al, 1990; Gupta and Nath, 1997 a & b; 2000; Nath and Badkur, 1990; 1993; Nath and Gupta, 2001; Datta and Nath, 2001; 2002).

It may be emphasized here that for both the bones CH turns out to be the best indicator for estimation of bone length. It may as well be added here that like other measurements of the bone fragments CH has a reasonably high correlation with bone length as well as low error of estimate. Thus bone fragments pertaining to the head region of humerus and femur are reasonably useful in providing a reliable estimate of bone length.

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Table-1 Bilateral variation in different proportions of Humers

Bone Measurements	Right (N=120)		Left (N=125)		Value of
	Mean	S.E.	Mean	S.E.	t
Maximum lenght (ML)	30.82	0.19	30.59	0.21	0.82
Transverse diameter of head (TDH)	3.82	0.03	3.80	0.03	0.50
Verital diameter of head (VDH)	4.06	0.03	4.04	0.03	0.50
Circumfrence of head (CH)	13.16	0.08	13.06	0.08	0.91

Table-1 Bilateral variation in different proportions of Humers

Bone Measurements	Right (N=120)		Left (N=110)		Value of
	Mean	S.E.	Mean	S.E.	t
Maximum lenght (ML)	43.02	0.32	42.82	0.03	1.64
Transverse diameter of head (TDH)	4.21	0.04	4.20	0.03	0.20
Verital diameter of head (VDH)	4.09	0.03	4.10	0.03	0.24
Circumfrence of head (CH)	13.54	0.10	13.50	0.10	0.28

Regression Equations for calculation of Humeral Lenght (HL)

HL=8.7 + 1.67 CH, 1.35 (SEE), r = 0.673
HL=13.7. + 4.21 VDH, 1.40 (SEE) r = 0.649
HL=13.0 + 4.64 TDH, 1.40 (SEE), r = 0.649

Regression Equations for calculation of Femoral Lenght (FL)

FL=7.64 + 2.61 CH, 1.50 (SEE), r = 0.813
FL=12.95 + 7.13 TDH, 1.66 (SEE) r = 0.797
FL=13.37 + 7.14 VDH, 1.87 (SEE), r = 0.715

A DEVELOPMENT PROGRAMME IN THE TRIBAL VILLAGES

Pinak Tarafdar

Abstract : Integrated Child Deveolpment Services is one of the conspicuous promotive development progarmmes of Central Government. In the Year 1990 it is launched and flourished in all the States and Districts of India. Under this project there are Anganwadi centres for giving health protection for the children up to 5 years and pregnant monthers. The purpose of the centres is to provide nutritional feeding for those persons along with basic education (pre-primary) for the children of 3-5 age-group. In the present study six exclusively tribal villages were taken to understand the implementation of ICDS in those areas and specifically among the tribals. As Jhargram sub-division (District-Midnapore, West) is one of the rich tribal inhabitant areas of West Bengal, so that sub-division was chosen for better interpretation.

INTODUCTION

In the present study, six exclusively tribal villages were taken to understand the implementation of ICDS in those areas and specifically among the tribals. Jhargram sub-division (District-Midnapor, West) is one of the areas of West Bengal richly inhabited by the tribals. The sub-division was chosen for better interpretation. The said villages were studied considering the criteria given in the chart-1. At a glance it can be said all the villages were both economically and educationally backward and deprived.

In this context six studied villages were covered by four Anganwadi centres. Name of those centres along with the villages are given in chart-2

Integrated Child Development Services is one of the conspicuous promotive development programmes of Central Government of India. In the year 1990 it is launched and flourished in all the States and Districts of India. Under this project there are Anganwadi centres for giving health protection for the children up to 5 years and pregnant mothers. The purpose of the centres is to provide nutritional feeding for those persons along with basic education (pre-primary) for the children of 3-5 age-group. Each centre comprises with two staff, one teacher and one helper. Teacher is responsible for giving education along with primary medical aids when ever necessary. A vital point is to be mentioned in this context that a medicine kit along with instruction book is given to the teacher, which covers the preliminary treatment of minor ailments. Helper is mainly for conducting the nutritional feeding programme. There is an instruction in this regard that cooked food must be supplied to the children and mother. Cooking materials and medicine kit are supplied to each centre after a periodic interval. There is a post of supervisor who is also an investigator of the said centre. Generally the supervisors conduct a monthly field visit to each centre for evaluating its activities. For detailed discussion about the problems and outcome a monthly zonal meeting the of supervisor, staff (teacher) and helper is held. The centre's workers are also responsible for providing information to the villagers about the dates of immunization or vaccination and pulse polio for the children and pregnant mothers. There is a government rule that a child can not get admission to the primary school without certificate issued by an Anganwadi centre. Anganwadi staff have to keep a continuous touch with the multipurpose worker of the sub-centre and doctors and staff of

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Primary Health Centre (PHC). A joint programme of anganwadi and subcenres is conducted for giving regular vaccines to the children. It is a three tire system. Anganwadi at first tier, Health sub-centre at second and PHC at third. At the time of critical diseases or emergency the teacher of Anganwadi centre have to consult nearby PHC doctor immediately. It is needed to mention here that only females are appointed as supervisors, teachers and workers. The educational qualifications are Higher Secondary, Secondary and class-VIII passed respectively. All of them are trained by special ICDS instructor.

The Anganwadi centre of Bansber was approximately 4 km. Away from the village Agaya ('type'-one). Following the government prescribed rule there are two persons in the said centre, teacher (1) helper (1). Apart from Agaya that centre was also covering the childrens (below-5) of Bansber village. Parents of Agaya were very much reluctant about regular sending of their kids to Bansber. The main reason behind that there was a canal in between them. Further, it was not possible for children to cross it alone and the parents could not manage time to company with them. Because the timings of that centre was from 7:00 a.m. to 9:00 a.m. During that hours parents were involved with their house hold works and agriculture. Parents also argued that feeding is one of the main attractions of the centre, but food supply was very irregular and uncertain, so after walking such a distance and westing time the children might not have their meal. Hence, they did not feel any interest to go there. Many of the parents also award that their children could not get admission in the primary school with out the certificate of Anganwadi centre. So, they tried to send there at least one or two days in a week. The parents who at all not bother about their children's education did not wish to send them at the centre. The fact can be noticed in the table-1. [In that table age group 0-9 yrs. was taken to reflect the percentage of then attending and previously attended children because the entire studied centre was started before 9 years or near about 10 years]. The percentage of Anganwadi attainder (or previously attended) was very low among the Koras of the said village.

Another Anganwadi centre was in the village Chotoshyamnagar. Primary school of that village was used as the centre because there was no separate place for the said purpose. Although the timings of the centre was from early stated hours but during the visit of researcher (Octobar 2002) there were very scanty children at 8:45 a.m. in the morning, when asked to the teacher she answered in those days there was no supply of food materials, so bulk of the children were not present for the said reason. The children of Barashyamnagar ('type' -one) were under that centre. Although village Chotoshyamnagar was adjacent to Barashyamnagar but all the parents were not feeling interest about the centre. According to them that centre was dry (without food) from many days so the children were not interested to go there. But many of the parents were also conscious to send their children in the day of pulse polio and they also realised that a boy/girl could keep touch to the centre through attending it two to three days in a week but there was no pressure for regular attendance. There was an added opinion that children had to return home in many days due to absent of both teacher and helper.

The Chapamanai Primary school at Shalukdoba was used as Anganwadi centre. The childrens of ('type'-two) Shalukdoba and Valuka villages were under that centre. During the field days (November 2002) that was another dry centre (without food). But there was number of children. Teacher told that due to Durga Puja there was some trouble of food supply but she hoped that would be regular with in a few days. Parents were very much

aware about the activities of Anganwadi and as reported their children were also benefited by the medicine of Anganwadi Medicine Kit. But there were another problem in those villages, some parent were not sending their children to the centre because the centre was adjacent to 'Nicher Para' (hamlet) of Shalukdoba. Due to internal clash or politics the relation between 'Nicher Para' with some families of 'Majher Para', 'Uppor Para' and village Valuka was not good during those days. So the children of that sector were deprived from availing the benefits of Anganwadi.

The fourth studied Anganwadi centre was located in the village Laredi. It was located inside a village home. The children of 'type'-three villages (Laredi and Kutusgeria) were under that centre. The teacher and helper were not belonging to the tribal community. As reported by them they were appointed in the centre during 90s. There was no such problem in the centre, availability of the food materials was noticed. They also told that there was no scarcity of food, medicinal kit and medicine. The workers informed the villagers about the pulse polio date and routine immunization date. According to them they were very much regular there and tried to attend the centre on each working day. But some families of both the villages were suspicious about their activities and not felt interest to send their kids to the centre. As table-1 shows and supportive qualitative data accumulated it can be realised that people's ('type'-three villages) participation and interest about the centre was not remarkable. Whenever asked about the consequences many of the villagers answered that Anganwadi workers were very much repulsive. They attended the centres 2 to 3 days in a week instead of 6 days. Necessary training was not given to the children. Only food was distributed but food materials wee not up to the mark. In some cases there was no need to go there because required food was supplied to home. Many of the villagers were not aware about the medicinal kit of Anganwadi centre.

It is already stated that the activities of Anganwadi also extend benefits to the pregnant mother. The workers have to notice about the pregnancy cases and their immunization dates along with the delivery dates. Nutritional feeding programme is also covered the pregnant mother up to 6 month after delivery. But among the studied villages there were no such instances of pregnant mother enjoying the said facilities. In very rare cases they were informed about the immnization but not aware where it could be availed. There was not a single instance of pregnant mother enjoying nutritional feeding programme. In the context of 'type'-two (Shalukdoba and Valuka) pregnant mother could get their immunization vaccines in the Rural Hospital but was not aware that nutritional feeding of Anganwadi also covered the pregnant mothers. Among 'Type'-three villages the centre worker told that they distributed the food to the home of pregnant mothers but villagers opined it could be occurred with in close houses surrounding the place of Anganwadi centre. But it was not supplied to all the needy houses of Laredi and houses of Kutusgeria. Immunization dates were informed in some cases. But the actual number of immunization to the call was not at all verified after the scheduled date.

Despite of government prior plan and programme the said project is not implemented fruitfully in the studied tribal villages. Some specific reasons are identified for the consequences:-

MAIN REASONS OF THE FAILURE

1) Less communication; centres were located covering the requisite population of the villages but not considering the distance of it from the village.

2) Adverse road conditions or natural barriers between a centre and a village. (Like canal in between Bansber centre and village Agaya.)

3) Timings of the centre were co-inside with the parents working hours.

4) Many villagers were not aware the activities of the centre and worker. Even they not realised the concrete aim and objectives of an Anganwadi centre.

5) Villagers main attraction was the food given by the centre. But they could not bear with irregular and long gap of food supply.

6) Some internal clash in between the villagers was also the reasons for depriving the said facilities to the children.

7) As it is a pre-primary training centre; so the kid's could be accustomed with the training through their mother tongue but it was not possible by the non-tribal teacher.

8) Long-term absenteeism of the teacher and worker implied the reluctances of the kids for not attending the centre.

9) Less communication between the workers and pregnant mother was responsible for not giving the minimum benefit to them as they required or as prescribed by the government.

It can be concluded that after thirteen years of such an important programme it is not implied in a proper manner to the prime target group of population. But the loop-wholes can be covered through prominent supervision and remodeling of the entire procedures. Target groups can be aware through the trained worker. Further it is possible when required educated tribal teachers are appointed for the tribal areas or the teacher should be sympathetic about their culture, educational and economic status. Same cultural milieu of teacher, worker and the villagers can solve the day-to-day problem of a centre. The centre-village distance and its physical barriers should be considered keeping in mind that the beneficiaries are the children below 5 years and pregnant mothers. A trained group can give the idea to the people about the aim and objectives of the Anganwadi centre. Smooth supply, quantity and quality of the foods should be strictly regulated through proper observation. Establishment of proper referral system is needed in between the prior stated three tiers (viz.) Anganadi, Health Sub-centres and PHC. However, a prominent implementation of the said programme can be a great opportunity for the tribal children and pregnant mothers for living and growing up through an optimistic, convenient and smooth environment.

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Chart -I

Type	Villages	Tribe	Criteria
ONE	Agaya	Santal Kora	Longest Distance from sub-divisional town,No modern helth institutions (viz) PHC in close proximity/
	Barashyamnagr	Santal	
TWO	Shalukdoba	Santal	Shorter than type-one, longer than type-three (distance), Binpore rural hospital at stone thronging distance. Private practitioner in close vicinity. Well communicated with Jhargram.
	Valuka	Santal	
THREE	Laredi	Santal	Shorter distance, modern medical facilities in closes proximity, but not properly well communicated with Jhargram.
	Kutusgeria	Santal	

Chart -2

Type	Villages	Anganwadi Centres
ONE	Agaya	Bansber
	Barashyamnagar	Chotoshyamnager
Two	Shalukdoba	Shalukdoba
	Valuka	
Three	Laredi	Laredi
	Kutusgeria	

Table-1 Attending/Attenden Anganwadi (0-9* yrs)

Village type	Villages	Tribe	Male				Female			
			Yes	No	New Born	Total	Yes	No	New Born	Total
One	Agaya	Santal	10 71.43	01 7.14	03 21.43	14 100.00	04 57.14	03 42.86	–	07 100.00
		Kora	01 20.00	04 80.00	–	05 100.00	03 33.33	06 66.67	–	09 100.00
	Total		11 57.89	05 26.32	03 15.79	19 100.00	07 43.75	09 56.25	–	16 100.00
	Barashyamnagar	Santal	13 65.00	04 20.00	03 15.00	20 100.00	10 66.67	03 20.00	02 13.33	15 100.00
T O T A L			24 61.54	09 23.08	06 15.38	39 100.00	17 54.84	12 38.71	02 6.45	31 100.00
TWO	Shalukdoda	Santal	26 74.29	07 20.00	02 5.71	35 100.00	24 85.71	02 7.14	02 7.14	28 100.00
	Valuka	Santal	04 100.00	–	–	04 100.00	03 50.00	03 50.00	–	06 100.00
T O T A L			30 76.92	07 17.95	02 5.13	39 100.00	27 79.41	05 14.71	02 5.88	34 100.00
THREE	Laredi	Santal	06 42.86	08 57.14	–	14 100.00	10 58.82	07 41.81	–	17 100.00
	Kutusgeria	Santal	07 31.18	14 63.64	01 4.55	22 100.00	04 30.77	09 69.23	–	13 100.00
T O T A L			13 36.11	22 61.11	01 2.78	36 100.00	14 46.67	16 53.33	–	30 100.00
GRAND TOTAL			67 58.77	38 33.33	09 7.89	114 100.00	58 61.05	33 34.74	04 4.21	95 100.00

New Born : 0-7 month. * Concerned centres were started before nine years (apprx.)

SEQUENCE OF ACHEULIAN CULTURE IN WEST BENGAL : GEOCHRONOLOGICAL AND MORPHOMETRIC STUDY

Manibrata Bhattacharya

Abstract : Explorations carried out at different spells durng 1986-2002 in south-central part of upland Bengal. They were made with an intention to make critical observation on the nature of the Palaeolithic industries, found at different places of the said region, and typological relations and contexts of their occurrences. Attempts were also made to bring out the local sequence of the hand axe and other related tool-assemblages at their respective sites. Giving an emphasis on the upper reaches of the Gandhesvari, some sites in the Purulia, Bankura and Midnapore Districts were selected. These places revealed Pleistocene sediments deposited on the Tertiary formations which were also implementiferous A number of samples of Palaeolithic implements and sediments of implementiferous beds were collected In addition, a number of sections were examined and recorded to identify the stratigraphy of the locality under study. The present paper deals with the results of this study.

The first section of the paper contains a brief but comprehensive description on geophysical setting. An analytical note on the stratigraphy and archaeological data on clusters of prehistoric industries of the upper Gandhesvari valley is delineated.[1] The second section presents a quantitative analysis with some selected parametric tests which were made in order to ascertain the nature of relationships existing between the industries as well as the sites.

Two other sites, viz. Basudih in the Kumari-Kangsavati valley in the Purulia District and Bamundiha on the Tarapheni in the Midnapore District, have been included to complete the picture.

Geomorphologically the upland Bengal belongs to a compact geophysical unit lying between Chotanagpur plateau and Lower Ganga basin (86^0-87^0 30' E; 24^0-22^0 30' N) which is basically a plateau-paneplane region.[2] This tract is bounded by the Purulia-Dhalbhum uplands on the west and the Rupnarayana plain on the east. The Paresnath hill and adjoining uplands followed by the Jamtara upland and succeeded by the Mayuraksi plain lying in the east-west direction, might be considered as the boundary on the north and the south. The area is bounded by the eastern extension of the Dalma range and southern part of the Rupnarayana plain. The major sections and subsections of this undulating terrain are Jamtara upland, the upper and middle reaches of the Ajaya-Damodara valley, Susunia upland, upper reaches of the Rupnarayana valley, upper and middle reaches of the Kangsavati valley, south-south east of the Barabhum upland and to some extent some limited part of the middle reaches of the Subarnarekha. The contour elevations of this terrain lie between 150m and 100m from msl. In the cultural historical literature this land is known as Rarh, meaning rugged reddish upland terrain. This land is a part of different administrative territories, namely, Purulia, Bankura, Burdwan, Birbhum and Midnapore Districts of West Bengal bordering the State of Bihar.

The terrain is highly dissected by numerous runnels, channels, streamlets which ultimately lead to the major drainage system, such as the Ajaya, Damodara, Rupnarayana,

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Kangsavati and the Suvarnarekha. The ancient eroded landscape is dotted with a number of *monadnocks*, namely, Jaicandi, Susunia and such others. The high reliefs comprising the Paresanath, Pancet and Ajodhya hills are conspicuous by their presence in the western boundary. The bed rock which has been exposed at a number of places is Archean schists. There are many places where sand stone beds are exposed. The gneiss and schists of Archean age form the eastern boundary of the Chotanagpur plateau.[3] The quartzite and schist occur mostly as intrusion and reef pendants in the granite gneiss. The schist of basic labrodite with minor quartizite of horn blend pegmitted occur here and there throughout the Archean tract and they often contain large crystals of flesh coloured patches of felspar and locally small flakes of mascovite. Patchy exposures of almost horizontal fossiliferous lower Gondowana Formation comprising coarse to medium grained yellowish and greyish white felspaltic and occasionally ferrugenous sandstone and red shales are also found.[4] Tertiary deposits, occurring as gravel conglomerate, and sandstones as beds horizontal with local dips varying from 10 to 40 are found scattered over certain areas. Beds of laterite occur usually at lower and occasionally at high contour elevation (120m-140m). Red and brown surface soil originated from deeply weathered basaltic rocks. The alluvium, which usually covers the river valley, is derived from decomposed rocks and deposited at the slopes.

Sites and Stratigraphy : With this background information on geomorphological features of the region, we may now enter the explored area in the upper Gandhesvari which lies between $86^{0}59'$-87^{0} E and $23^{0}25'$-$23^{0}26'$ N, and area of 4 sq.km. where systematic fieldworks were carried out at spells during 1986-2002. This area is situated at a distance of 15 km north west of Bankura, the district headquarters. The braided channels highly dissecting the rolling landscape constitute the head waters of the upper Gandhesvari and monadnock, Susunia (440m), around which the radiated runnels are most important features. A number of sections are exposed in the cutting of the runnels and streams at different places in Ramnathpur, Goaldih and Netakamta villages. The contour elevations of the study area varies between 140m and 120m. The natural slope is from north-northwest to south-southeast direction. The gradient and nature of direction of the explored terrain can be easily ascertained from Figure 1. More than a dozen of sections have been examined and recorded (Fig.3) at different localities. A large number of prehistoric tools have been found both in situ and on the eroded surface of the explored area. The sites are mainly situated in the revenue districts of Ramnathpur, Netakamta, Happana and Goaldih. Besides these sections of runnels and streams, a number of mostly dried up tanks, ditches and local earth quarries (from where people collect sticky coloured clay to build, repair and decorate their houses), have been observed. It is important to mention that the local cultivators, in their endeavour to convert unfertile and pebbly bed land surface to plots of cultivable fields, did reclamation by removing the sheet of uppermost surface of silty *kankar* nodule with chunks of stone pieces. Such reclamation of land has resulted in the exposure of the underneath layer. These reclaimed plots and patches of exposed places have yielded a number of prehistoric tools at Ramnathpur. The date thus collected have added valuable information in understanding the sedimentation process and to establish the local stratigraphy and the contexts of occurrence of the prehistoric tools.

The Pleistocene deposits in the study area are mostly fluvial and aeolian. The deposits are found mostly on the Lower Gondowana formations, sandstone bed, and occasionally, on Archean Gneiss-schists. A brief discussion on the Pleistocene stratigraphy of the study

area is given below. The Pleistocene sedimentary beds, as identified from observation at different sections, reveal geomorphological sequence of depositional and erosional events.

It is important to mention that no earlier sediments of Lower Pleistocene formation have been observed during the fieldwork at this place. It appears that the deposit had been carried out by high energy bed load fluvial forces. In some places Lower Paleaolithic tools have been found at the upper most level of this deposit. At some spotsnear the villages of Goaldih and Ramnathpur a lateritic horizon impregnated with boulders, gravels and cobbles have been noticed. It seems that this gravel bed horizon belongs to Middle Pleistocene. Similar view has also been expressed by Shastri in connection with the study of Pleistocene vertebrates from Susunia.[5] The exact relation between the lateritic and that of the cemented gravel in grey yellowish sandy clayey matrix has not been establishd. Above the lateritic and cemented gravel bed, yellow or yellowish brown silty loam with kankar can be traced. This layer is thin, exposed in some places and extended over a few kilometers. At the exposed surface this bed is highly eroded and dissected. The cemented gravel bed is overlain by a thick deposit of yellow silty clayey soil containing a number of upper Acheulian hand exes including cleavers. They usually occur at the lower level. At a very recently reclaimed plot, which is under preparation for cultivable land from where the villagers removed a thick sheet of silty *kankar* (barren upper most surface), the yellowish silty loamy clayey sticky bed has been exposed. Here a number of upper Acheulian tools (About a dozen) occur in cluster of about 10m radius. This yellow silty loamy soil of the reclaimed plot is calcareous and at times mottled. In some places the colour also changes and becomes whitish or whitish grey due to high percentage of calcium carbonate and the mottling is due to the presence of soft amorphous ferrugenous segragates. This deposit texturally varies from sandy loam to clayey. In some places this silty loamy clayey sticky and calcareous soil also contains *kankar* and nodule at the upper level. It seems that this bed may be of early Late Pleistocene. A loosely packed gravel bed with nodule, kankar and reddish yellow silty clayey bed of thin deposit has been found in a few places between Ramnathpur and the Susunia foot hills to the north of Susunia village. Upon this loosely packed gravel is a bed of loamy clay with kankar and faded yellowish brown or reddish brown soil. At 1.5 km northwest of Ramnathpur this reddish brown or yellowish brown soil, containing comparatively higher percentage of kankar as well as nodule and chunk of stone, yielded a number of Middle Palaeolithic tools. It is important to mention that some mamalian fossils of bos, *equus* and *elephas* of Late Pleistocene have been found from the said deposit. At Dhankora, a few kilometers away from the explored area, the Palaeocdon namadicus fossil has been found. The presence of kankar and nodule indicates that the loamy deposits were subaerialy exposed and the presence of fossil mammal and fine grained Middle Palaeolithic tools, found in association with a typical awl, beautifully made on a long blade like flake, suggest that the raddish brown aeolian loam deposit may be of Late Pleistocene age. The whitish yellow or light brownish red sandy silty or silt loam with with less kankar belongs to sub-Recent period.

Archaeological finds (Pls. 11-14) : A number of palaeolithic tools of different types have been encountered during field work. Only a sample of the tools were collected by stratified random sampling design from the places mentioned above. By adopting multi-stage sampling procedure only 176 sample tools were selected for study. These tools include both the finished and unfinished ones. Some tools were found in stratified in situ contexts

and others were on the surface. Those found on the surface include both fresh and rolled varieties. As mentioned earlier, the surface of the terrain is very eroded and highly dissected. It appears that fresh varieties are exposed due to erosion but in the case of the rolled ones it seems that they were carried down by natural agency. The rolled tools occur in secondary deposit context. The raw materials used are either quartz or quartzitic sandstone. The grains of the rocks vary between coarse and medium. Those made on chert is fine grained. Some tools are highly patinated and other are relatively fresh. In the present study only finished tools, which occur in the sample, are considered. It is found that about 70% tools are finished. The remaining collection, about 30% is unifinished, which includes half finished tools, irregular pieces of stones where a few flakes can be traced and a number of flakes with or without secondary work but not conforming to any tool types. On the basis of typological study, the selected finished tools can be broadly divided into two distinct lithic traditions, viz. The Lower Palaeolithic and the Middle Palaeolothic, each being found in distinct horizon. The Lower Palaeolithic tools have been collected from the uppermost level of the cemented gravel bed or in a few cases on lateritic gravel bed as well as largely from yellow silty loam bed. The Middle Palaeolithic tools occur at the upper level of the yellow silty loam in limited cases and largely from the loose gravel and yellowish brown cases and largely from the loose gravel and yellowish brown silty *kankar* and nodule beds.

The main tool types of the lower Palaeolithic comprise hand axe, cleaver, scraper, pick and others. They are of various descriptions and their frequency distribution is given in Table 1.2. It appears that the highest incidence occurs for hand axe (35% of the total collection). Though cleaver is usually included within hand axe complex, its frequency, which figures 7% of the total collection, has been shown separately. Such an incidence (7% of the total collection) of cleaver in the study area seems very significant. So, the percentage of hand axe and cleaver together shows the highest figure, i.e. 42%. Next comes scrapers with 18%. This type, which includes pick and parallel sided elongated flake, i.e. knife, and has been classified as of other category, constitutes 3%. Where the Lower Palaeolithic artefacts constitute 66%, the remaining 34% are represented by the Middle Palacolithic ones. Typologically the Middle Palacolithic tools show the following break up : scraper 22%, point and awl 11% and others 3%. They are usually made on medium to fine granted rocks, viz. Quartz and chert. So far as the dimension of the tools are concerned they are bigger and larger in case of the Lower Palaeolithic tools and comparatively smaller and shorter in case of the Middle Palaeolithic ones (Tables 1.3 & 1.4). The mean values for length, breadth and thickness of the Lower Palaeolithic industry vary between 16 cm and 10 cm, 9 cm and 7 cm and 5 cm and 4 cm respectively; the corresponding values for the Middle Palaeolithic ones are 8 cm - 7 cm for length, 6 cm - 5 cm for breadth and little more than 2 cm for thickness. In this Situation a brief description of different tool types seems plausible.

Handaxe : In the Frequency Distribution Table 1.2 of historic tools, this type having scoring 35% shows the highest incidence. Both core and flake were used to make different varieties of hand axes. Hand axes show variation both in shape and in size. Table 1.3 reveals the range of variation and distribution of mean values of dimensions. The maximum and minimum lengths are 17cm and 9cm with mean value 10.2 cm. For breadth the corresponding figures are 10.4 cm 4.1 cm and 7.2 cm and for thickness cm and 4.2 cm. Various shapes are almond, long oval, oval, cordate, lanceolate and triangular. Most of the hand axes are

fresh but patinated and bear the marks of use. In some cases rolled and highly patinated varieties are also found. The flakings were done very skilfully and retouches are found at the edges. Most of the tools are uniformly flaked from all over the surface. The butt end in some cases are thick but flaked. Cross-section varies from lenticular to rectangular. Those made on flakes have triangular or plano-convex cross-sections. Initial flake scars retain at the ventral surface but the edges have retouches.

Cleaver : It constitutes 5% of the total collection. Both big and long, and small and short varieties are found. The maximum and minimum length, breadth and thickness are 22.5 cm and 12 cm, 5.6 cm and 8.0 cm and 6.4 cm and 3.0 cm respectively; the mean values for length, breadth and thickness are 16.4 cm, 9.4 cm, and 4.5 cm. Besides 'V' and 'U' shaped cleavers, there are other varieties. These other varieties include two tools identical in size and shape. These are long and rectangular in outline with transverse oblique cutting edge. Their surfaces, including edges, are meticulously flaked. Very fine flakings are the most important features of the two cleavers. Cross sections are mostly planoconvex, rectilinear and quadrangular.

Scraper : To the Acheulian industry belong 18 scrapers of broad and moderate size; 22 belong to Middle Palaeolithic Tables 1.3 & 1.4 give metric data for both the groups. Those belonging to the Acheulian industry are comparatively cruder broader and thicker. The scrapers are of various descriptions namely end, side, convex and round. Mousterian technique is the marked feature of Middle Paleolithic scrapers. The cross sections are either planoconvex or biconvex.

Points and Awls : They constitute little more than 11% of the total collection of which 9% are points and 2% are awls. The points are made of both broad and leaf shaped flakes. Mousterian points are conspicuous by their presence. In some cases some points are elongated and others triangular. Awls are long. One awl shows typical 'D' shaped cross section at the tips. It is long and beautifully made on a blade flake having planoconvex or roughly triangular cross section at the middle.

Others : Of the tools of both the Acheulian and the Middle Palaeolithic industries, 7% are lumped together under this category. Pick is one of the important types. It is made on a moderately big pebble: one is meticulously chipped to produce a protuberence. Parallel sided knife on a long oval thin flake is another important type. It shows mastery of technique in its prepartion. Secondary small flakes are found all over the cutting edge. Cross section is biconvex. Other tools are either big and/or small sized flakes used for cutting purposes.

The Lower Palacolithic tools typologically belong to the Acheulian industry. These are characterised by extreme symmetry of outline, thickness and small size and, at least in some cases, by very shallow and fine flake sears and even surfaces. As most of the tools are made on hard quartz, one should take into account the degree of mastery of skill in manufacturing such beautiful symmetric and evenly shaped tools. Hence, the industry with different types of hand axes, cleavers and scrapers including blade-like flake, represents an advanced stage of lithic industry and can be placed in the upper Acheulian stage. In fact this Acheulian industry is comparable with the same in other parts of the world so far as the typo-technical characteristics of the tools are concerned.[6] The craftsmanship, employed in making such industry on the quartz and sandstone, can be compared with the highest skill of tool making technology of the Acheulian man in the global context. It is

evident from stratigraphical context of occurrence that they belong to late Middle Pleistocene. Tools of the Middle Paleolithic industry mainly comprise Levallois-Mousterian flakes, scrapers of different description, points, awls, denticulates and blade-like flakes. There was a shift in the choice of raw material. As found elsewhere in India, finer grained rocks substituted for coarse to medium grained ones. The chert was often used and mention must be made of typical Mousterian points, convex, round and end-scraper, awl made on elongated blade-like flake with 'D'- Shaped cross section at the top which are conspicuous by their presence. They usually occur in the reddish or yellow brown silt with *Kankar* gravel and nodule bed which belongs to late Pleistocene.

II

In this section an effort is made to compare, at first, the morphometric data of five artefact assemblages collected from Ramnathpur (*abv.* RP), Goaldih (*abv.* GD), Bonkati (*abv.* BO), Happana (*abv.* HA) and Netakamta (*abv.* NK) which are situated close to each other in the upper Gandhesvari valley. (*Fig.* 4). Then a comparison of selected artefact assemblages of Ramnathpur, representing the upper Gandhesvari, is made with those of Basudih (*abv.* BS), in the middle reaches of the Kangsavati, and Bamundiha (*abv.* BA) on the Tarapheni. The aim of such comparison is to ascertain their respective position in relation to each other. This comparative study helps to suggest local cultural sequence of hand axe culture in West Bengal. The sample size of hand axes for five culture in West Bengal. The sample size of hand axes for five clusters of the Gandhesvari are as follows : 10 for RP, 9 for GD, 54 for BO, 7 for HA and 14 for NK. To ascertain the local sequence of hand axe culture in W. Bengal, 18 hand axes from Basudih, 13 from Bamundiha and 10 from Ramnathpur are selected. Besides, 9 cleavers from Bonkati and 4 from Happana, 2 from Basudihand 4 from Bamundiha are also considered. With regard to scrapers, 8 each from Ramnathpur and Bonkati, 5 from Basudih, 13 from Bamundiha and 7 from Netakamta are considered. The small number of cleavers and scrapers are included as they are consituents of hand axe culture in W. Bengal too. It seems important to mention that in this study of parametric. Tests on morphometric attributes of artefact assemblages, due considerations are given to well as geographical location of the sites. So far as metric data are concerned, maximum values for length, breadth and thickness of individual tools were measured. Then means (X), standard deviations (SD) and coefficient of variations (CV) of each tool type are calculated separately for each cluster and/or site. The types, clusters, sites, respective sample size along with X and SD of the samples can be found in the Table 2.1 Distribution of sizes, length, breadth and thickness of the tool types are also shown in Table 2.1. Intersite tool types are compared using variance ratio test, and the value of F are given in Tables 2.2-2.7. On the basis of measurements and calculations scatter diagrams are drawn on the basis of which regression lines were fitted in Figs. 9-11. The hand axes and scrapers from three sites, RP, BS and BA, are compared and put to relevent paramet-Frequency distribution of means, standard deviations coefficient of variations of the selected tool types are shown Tables 2.1-2.8. The coefficient of correlations of paired variables (r) are provided in Table 2.9. The result of the t-test on size of different tool types is given in Tables 2.10 and 2.11 and regression equation in Tables 2.12 and 2.13 gives comparative analysis of hand axes of five different sites of which two are from Chikri on-Pravara (Maharashtra) and Paleru (southern Andhra Pradesh) in Peninsular India.

It appears from the Table 2.1 and Fig. 4 that RP and GD show small values (9.98 & 9.3 cm) for mean length, but they vary from three other clusters - BO, HA and NK. On the other hand, CV distribution shows a different picture. HA shows a lower value (20.8) and GD a bit higher (23.6). The variance ratios, F-values, do not show any significant difference. In other words, they are homogeneous. It is also true to some extent for breadth (Tables 2.2 & 2.3). However, in respect of thickness there are_significant differences (Table 2.4). When shape is considered, it is found that GD hand axes are broader and HA narrower being 0.93 and 0.57 respectively. The refinement index (T/L & T/B) reveals that BO and NK are less refined than those of others. In this respect F-values also show significant difference (Table 2.7).

The size of cleavers of BO and HA (Fig. 5) does not vary significantly as found from the CV as well as F values (Table 2.1). For the latter case, estimate shows that the value for F is 1.06 with df. 8 and 3 for length (Table 2.5). Similar is the results for breadth and thickness. Hence, it can be said that two clusters of cleavers of the Gandhesvari valley do not show any significant difference even in 1 per cent indicating that they are, in fact, homogeneous.

A comparative analysis of scrapers from different sites reveals that NK is apparently different so far as CV of length is concerned (Fig. 6). Similarly, breadth and thickness values of CV for RP show difference with that of BO and HA. But in variance ratio test, F test three sites do not show any significant difference (Table 2.6). The value for length is 1.77 with df. 7 and 8 for RP and BO; it is 2.73 with df. 7 and 8 for RP and NK and 1.55 with df. 5 and 8 for NK and BO. Similar is the pattern for F value for breadth (Table 2.5) which indicates that there is no significant difference between the sites of the Gandheswari valley. But in case of thickness significant differences were found between RP and BO and also between RP and NK However, NK and HA do not show any such difference.

Length-thickness and breadth-thickness-do not indicate 2.12 correlation with the t-test. The Tables 2.11 and show that Basudih hand axe had a significant correlation between length and breadth (.01 level) and breadth and thickness (highly significant). But the t-test does not show any significant correlation (Table 2.10). Similar observation can be made in respect of length and breadth and length and thickness of Bamundiha examples (Table 2.8 and 2.10); but the correlation between breadth and thickness is less significant (.05 level). However, correlation between breadth and thickness is highly significant in case of Bonkati hand axes (see also Figs. 10 & 11 for scraper and cleaver). Fig. 12 shows the normal distribution pattern of the hand axes of different samples and their respective position. It is worth mentioning that the correlation coefficient shows positive relation between these paired variables for all three samples from Ramnathpur, Basudih and Bamundiha; but in case of Bonkati there are negative relations between length and thickness as well as breadth and thickness.

In respect of Shape (Table 2.13), it is evident that RP hand axes are broader (0.59) than those of Bamundiha (0.7) and Basudih (0.7). When they are compared with the cultures of Peninsular India, Chikri of Maharashtra and Paleru of southern Andhra Pradesh, it is found (Tables 2.13 & 2.14) that RP is closer to chikri (0.55); but Bamundiha and Basudih, both of which have tbe same F value (0.7), are very close to Paleru (0.7). But with regard

to refinement value (index of thickness over breadth), Ramnathpur (0.33) shows closeness to Paleru (0.44) and significant differences from all the sites compared (value for RP 0.33 against 0.55 of Basudih, 0.56 for Bamundiha and 0.63 for Chikri). Hence, if can be said that the Gandhesvari hand axes show significant differences in comparison to other industries (see Fig. 12). This result becomes much more relevant when a test of significance on paired variables of coefficient of corretations is made (Table 2.9).

Though the sample size of cleaver is small, there is significant relation at 0.05 level between length and breadth. The scrapers of Ramnathpur show some significant relation between length and breadth; but in respect of other variables, length and thickness and breadth and thickness, the relations are negatively associated. The scrapers of Basudih and Bamundiha do not show any significant relations as evident from t-test analysis. The t-test analysis of correlation coefficient shows that out of three pairs two are negatively associated in case of Basudih and the remaining one is only positively related (Tables 2.9 & 2.10). In case of Bamundiha all the paired variables are positively related. It is also evident from the Table 2.13 and 2.14 that so far as the size and shape, and length and breadth are concerned, Basudih and Ramnathpur are closely related. In respect of refinement of the hand axes they are different. The picture is somewhat different when Bamundiha is compared with Ramnathpur. The ratios of thickness-length and breadth-length of the two sites are close to each other, but when other variables are considered they show marked difference.

In this context it is worth mentioning that Basudih and Bamundiha show significant differences in respect of all the variables which can be accepted to be due to the fact they represent two different phases of hand axe culture of this region. This observation becomes more relevant when scrapers of Basudih and Ramnathpur assemblages show, on comparison, that the values are closely related. In short, Ramnathpur shows closer affinities with both the sites, Basudih and Bamundiha, which in turn difler from each other. The Bamundiha artefact assemblage, containing pebble choppers, hand axes and scrapers of large size and retaining a less advanced manufacturing technique in comparison to Basudih and Ramnathpur, holds a lower position in the local sequence of hand axe culture in this region.

The position of Ramnathpur assemblage can be ascertained from different parametric tests used here on size, shape and refinement. From the results of the tests it can be inferred that Ramnathpur represents the most advanced one in the local sequence. The position of the assemblages of Basudih is in between Bamundiha and Ramnathpur but with a tendency of closeness towards Ramnathpur. Hence, in the local sequence of Hand Axe Culture of West Bengal, the industry of Bamundiha represents an earlier phase which is succeeded by the industry of Basudih which in turn is followed by the Ramnathpur industry,

Both in Ramnathpur and Basudih, elements of Middle Palaeolithic tools are found; but in Basudih the frequency is less. A micoquin hand axe, belonging to Mousterian phase, occurs at Basudih.

The collected data from different places may not be sufficiently large but the findings made on the basis of their typo-technique and morphometric analyses are meaningful. However, such findings on the local sequence of Hand Axe Culture of West bengal are tentative. To trace the genesis and process of development of Hand Axe Culture of Bengal, further exploration and field study are imperative.

NOTES & REFERENCES

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The Quarternary stratigraphy and associated prehistoric industries can be correlated as given below:

TABLE 1.1

Geo-chronology and Prehistoric Industries of the Upper Gandhes'vari, Bankura

Early Holocence or Sub Recent	Reddish silty and sandy kankar soil	Dominated by aeolian deposit	Semi arid and dry	? Mesolithic (microliths, flakes & blades)
Terminal Late Pleistocene	Reddish yellow and yellowish with kankar and small gravel		Semi arid and humid (clod, dry and warm wet)	? Upper Palaeolithic Middle Palaeothic
Late Pleisticene	Loose gravel with clay	Predominantly fluvial deposit	Humid (most, dry)	Middle Palaeolithic and Acheulian (?)
Late Middle Pleistocene	Yellowish loamy clayey soil	Dominated by aeolian deposit	Semi arid and dry	Acheulian industries
Middle Pleistocene	Cemented boulder, gravel with sand clay	Dominated by high energy fluvial flow	Humid and wet	Lower Palaeoli thic tools (?)
Tertiary	Sandstone	–	–	–

TABLE 1.2

Requency Distribution of Palaeolithic Tool Type of Upper Gandhesvari Valley.

Cultures	Hand axe	Cleaver	Scraper	Points	Others	Total
Lower	42	9	22	–	3	76
Palaeolithic	(34.7)	(7.4)	(18.2)		(3.3)	63.6)
Middle	–	–	28	14	3	45
Palaeolithic	–	–	(21.6)	11.5)	(3.3)	36.4)
	42	9	50	14	6	121
	(34.7)	(7.4)	(39.8)	(11.5)	(6.6)	(100)

TABLE 1.3

Maximum, Minimum and Mean Values of Length, Breadth and Thickness of Lower Palaeolithic Tools.

	Length			Breadth			Thickness		
Tools	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean
Handaxe	17.0	9.0	10.2	10.4	4.1	7.2	7.1	2.3	4.2
Cleaver	22.5	12.0	16.4	12.5	8.0	9.4	6.0	4.0	4.5
Scraper	16.4	9.5	13.2	14.0	8.0	9.0	7.4	4.0	4.7

* Based on collection from Ramnathpur, Netakamta and Goaldiha.

TABLE 1.4

Metric Values Middle Palaeolithic Tools of Upper Gandhesvari :

	Length			Breadth			Thickness		
Tools	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean
Scraper	10.4	4.0	8.3	8.0	2.5	6.0	4.0	2.0	2.6
Awl & Point	10.9	5.0	7.0	6.7	2.6	4.8	2.6	1.4	2.1

TABLE 2.1

Distribution of means, standard deviations and coefficient of variations of size and shape of selected tools from different sites, Gandhesvari valley :

	RP	GD	BO HA NK	BO HA RP BO NK
	X	9.98 9.3	12.7 12.9 11.6	11.3 9.8 75. 7.2 11.7
Lenth	SD	2.3 2.2	2.9 2.7 2.7	3.15 2.80 2.85 2.16 1.70
(L)	CV	23.24	23 21 23	28 29 38 30 15
	X	5.98 7.6	8.2 7.37 7.14	7.9 9.8 5.7 8.7 7.7
Breadth	SD	1.57 1.7	1.8 .99 1.37	3.25 3.2 2.24 2.3 1.66
(B)	CV	26. 21	22 13 19	41 33 39 26 22
	X	3 29 3.32	5.98 3.8 4.35	4.47 4.17 2.06 3.9 4.5

Thickness	SD	.83 1.01	1.8.87	1.43 1.7 .20	0.44 1.7 1.94
(T)	CV	25 33	35 14 33	38 48	21 44 43
	X	.59 .93	.68 .57 .65		
Breadth	SD	.08 .36	.31.08 .13		
Lenght (BL)	CV	14 39	46 14 20		
	X	.57 .43	.65 .50 .57		
Thikness	SD	.18 .11	.33 .07 .13		
Breadth (TB)	CV	32 25	51 14 23		
	X	.33 .35	.40 .28 .36		
Thickness	SD	.08 .09	.12 .07 .09		
Lenght (TL)	CV	24 25	30 25 25		

TABLE 2.2

Distribution of variance ratios, F-value, with degree of freedom for length of hand axes from different selected sites, Gandhesvari valley :

	RP (n=10)	GD (n=9)	BO (n=54)	HA (n=7)	NK (n=14)
RP (n=10)	1.64	1.64	2.4	1.7	1.3
df.		9.8	53.9	6.9	9.13
GD (n=9)			1.3	1.01	1.3
df.			53.8	8.6	8.13
BO (n=54)				1.3	1.0
df..				53.6	53.13
HA (n=7)					1.3
df.					13.6
NK(n=14)					

TABLE 2.3

Distribution of variance ratios, F-values, with degree of freedom for breadth of hand axes from selected sites, Gandhesvari valley :

RP	GD N=10	BO n=9	HA n=54	NK n=7	n=14
RP (n=10)		1.2	1.2	2.36	.44
		9.8	53.9	6.9	9.13
GD (n=9)			1.0	2.85	1.44
			53.8	6.9	9.13
BO (n=54)				2.89	1.46
				53.6	53.13
HA(n=7)					1.38
					13.6

TABLE 2.4

Distribution of variance ratios, F-values, with degree of freedom for thickness of hand axes from selected sites, Gandhesvari valley :

	RP N=10	GD n=9	BO n=54	HA n=7	NK n=14
RP (n=10)		5.8	2.32	8.7	3.5
		9.8	53.9	9.6	9.13
GD (n=9)			2.5	1.5	1.7
			9.53	9.6	9.13
BO (n=54)				3.75	1.5
				59.6	53.13
HA (n=7)					2.5
					6.13
NK (n=14)					

TABLE 2.5

Distribution of variance ratios with degree of freedom for length, breadth and thickness of cleavers from Bonkati and Happana, Gandhesvari valley :

	Length	Breadth	Thickness	
F-values	1.06	1.11	1.02	BO n=9
df.	8.3	3.8	3.8	HA n=4

TABLE 2.6

Distribution of va.iance ratios, F-values, with degree of freedom for scrapers of different sites in the Gandhesvari valley :

	Length			Breadth			Thickness		
	RP n=8	OB n=9	NA n=7	RP n=8	BO n=9	NA n=7	RP n=8	BO n=9	NK n=7
RP (n=8)	1.77	2.73		1.04	1.06		15.46	20	
df	7.8	6.8		9.7	8.6		9.7	8.6	
BO (n=9)	1.56			1.7			1.3		
df.	8.6			8.6			6.8		

TABLE 2.7

Distribution of variance ratios, F-values, with degree of freedom for breadth/length of hand axes from different sites, Gandhesvari valley :

	RP (n=10)	GD (n=9)	BO (n=54)	HA (n=7)	NK (n=14)
RP (n=10)		21.0	140.0	1.0	26.1
df.		9.9	53.9	9.6	9.13

GD (n=9)	.007	21.0	1.25
df.	53.6	8.6	8.13
BO (n=54)		140.0	26.1
df.		53.6	53.13
HA (n=7)			26.1
df.			13.6
NK (n=14)			

TABLE 2.8

Distribution of means, standard deviations and coefficient of variations of hand axes from selected sites of West Bengal :

		RP N=10	BS n=8	BA n=13
Length(L)	$\bar{X}$	9.93	13.8	12.5
	SD	2.3	2.3	2.3
	CV	23	18	18
Breadth (B)	$\bar{X}$	5.98	8.4	8.71
	SD	1.57	1.47	1.5
	CV	26	17	17
Thickness (T)	$\bar{X}$	3.29	4.6	4.9
	SD	.83	1.01	1.0
	CV	25	21	21
Length/ Breadth (L/B)	$\bar{X}$	.59	.61	.71
	SD	.08	.07	.07
	CV	14	10	10
Thickness/ Length (T/L)	$\bar{X}$	.57	.38	.39
	SD	.18	.05	.1
	CV	32	14	18
Thickness/ Breadth (T/B)	$\bar{X}$	.33	.55	.56
	SD	.08	.10	.05
	CV	24.1	18.2	13.2

TABLE 2.9

Coefficient of correlation of paired variables (r)
On selected tools from selected sites, W. Bengal :

		Length-Breadth	SE	Length-Thickness	SE	Breadth-Thickness	SE
Hand	RP	.69	.05	.50	.025	.36	.013
	BO	.09	.018	-.06	.0001	-.38	.003
	BS	.59	.038	.32	.006	.70	.029

	BA	.67	.043	.70	.037	.53	.022
	RP	.75	.0703	–.15	.028	–.15	.028
Scraper	BS	–.03	.0018	–.33	.0218	.57	.065
	BA	.47	.017	.27	.0013	.26	.052
Cleaver	BO	.90	.09	.66	.0484	.45	.0225

TABLE 2.10

t-Test analysis of hand axe, cleaver and scraper

Hand axe	Length-Breadth	Length-Thickness	Breadth-Thickness
RP (n=10 ; df. 8)	2.76(.02 level significance)	1.6	1.09
Bo (n=54 ; df. 52)	.65	.46	3.16 (high significance)
BS	2.95	1.33 (high significance)	3.8
BA (n=13 ; df. 11)	3.04 (.01 level significance)	3.34 (01 level Significance)	2.12 (.05 level significance)
Scraper			
RP (n=8 ; df. 6)	2.7 (.05 level significance)	-.3	-.3
BS (n=5 ; df. 3)	–	-.6	1.2
BA (n=13 ; df. 11)	1.8 (.10 level significance)	.93	.83
Cleaver			
BO (n=13 ; df. 11)	5.6 (high significance)	2.35 (.05 level significance)	1.36

In Table 2.10 2.11 the t-test shows a significant correlation (.02 level) between length and breadth of the hand axes of Ramnathpur whereas in Table 2.9 r-values, coefficient of Correlation, show a positive relation between length and breadth, length and thickness and breadth and thickness. However, the latter

TABLE 2.11

t-test Analysis of hand axes, scrapers in relation to different sites :

Sl. No.	Groups	Length	Breadth	Thickness	B/L	T/B	T/L
A:	HAND AXES :						
1.	Basudih and Ramnathpur	2.82 (.01 level)	4.06 (Highly significant)	2.93 (.01)	1.28	.6	.67

2.	Basudih and Bamundiha	.41	.70	.51	.16	.33	1.5
3.	Bamundiha and Ramnathpur	2.65 (.01 level)	1.38	4.13 (.01 level)	5	.4	1.5
B. :	SCRAPER						
1.	Basudih and Ramnathpur	2.74 (.02)	1.59				6.84 (Highly Significant)
2.	Basudih and Bamandiha	.04	2.6 (.02 Significant)				.02
3.	Bamundiha and Ramnathpur	2.20 (Significant)	3.74 (Highly significant)				7.08 (Highly significant)

TABLE 2.12

Regression Equations

A : HAND AXES :

a) Basudih

1 Length = 3.88 + 1.07 B
2 Breadth = 4.26+.32 L
3 Breadth = 4.95+.74 T
4 Thickness = .86+.66 B
5 Length = 10.10+.62 L
6 Thickness = 2.53+.16 L

b) Ramnathpur

1 Length = 3.24+1.01 B
2 Breadth = 1.28+.47 L
3 Breadth = 3.78+.68 T
4 Thickness = 2.16+.19 B
5 Length = 5.43+1.38 T
6 Thickness = 1.49+.18 L

c) Bamundiha

1 Length = 3.48+1.03 B
2 Breadth = 3.29+.43 L
3 Breadth = 4.97+.77 T
4 Thickness = 1.69+.36 B
5 Length = 4.85+1.58 T
6 Thickness = 1.06+.31 L

B : SCRAPERS :

a) Basudih

1 Length = 10.33-.05 B
2 Breadth = 6.95-.01 L
3 Breadth = 3.88+.75 T
4 Thickness = .93+.42 B
5 Length = 12.80-.73 T
6 Thickness = 5.32-14 L

b) Ramnathpur

1 Length = 2.11+.95 B
2 Breadth = 1.25+.58 L
3 Breadth = 7.25+.76 T
4 Thickness = 2.17+.02 B
5 Length = 9.53-.97 T
6 Thickness = 2.23-.02 L

c) Bamundiha

1 Length = .05+1.25 E
2 Breadth = 6.45+.17 L
3 Breadth = 6.92+.33 T
4 Thickness = 2.17+.20 B
5 Length = 6.4+.92 T
6 Thickness = 3.05+.07 L

C : CLEAVER :

a) Bonkati

1 Length = 4.39+.87 B
2 Breadth = 2.57+.92 L
3 Breadth = 4.06+.86 T
4 Thickness = 2.62+.23 B
5 Length = 5.82+1.2 T
6 Thickness = .46+.35 L

TABLE 2.13

Comparative analysis of hand axes of five selected sites, Gandhesvari valley (RP), W. Bengal (BS & BA) and Peninsular India (CH & PA) :

		RP N=10	BS n=13	BA n=	CH n=	PA n=
Length (L)	X	0.98	13.8	12.5	13.8	9.8
	SD	2.3	2.3	2.3	3.8	1.7
	CV	23	18	18	27	18
Breadth (B)	X	5.28	8.4	8.71	7.63	6.89
	SD	1.57	1.47	1.5	.30	1.06
	CV	26	17	17	4	15
Thickness (T)	X	3.29	4.6	4.9	4.81	3.06
	SD	.83	1.01	1.0	1.3	0.7
	CV	25	21	21	25	21
Breadth Length		.59	.69	.71	.55	.69

Thickness Length	.57	.33	.39	.33	.31
Thickness Breadth	.33	.55	.56	.63	.44

TABLE 2.14

Distribution of metric values on shapes end refinements of hand axes from five selected sites of West Bengal and Peninsular India :

	RP	BS	BM	CH	PA
B/L	.59	.69	.71	.55	.69
T/L	.57	.33	.39	.35	.31
T/B	.33	.55	.56	.63	.44

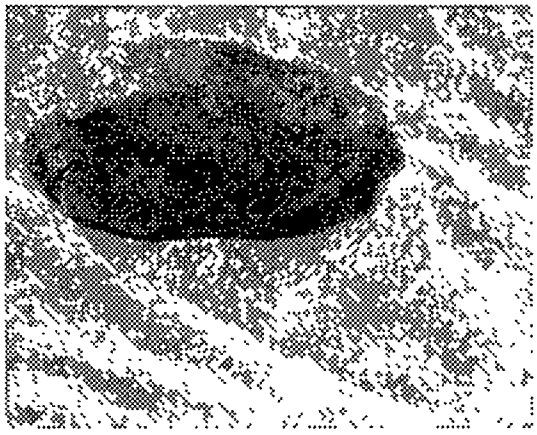
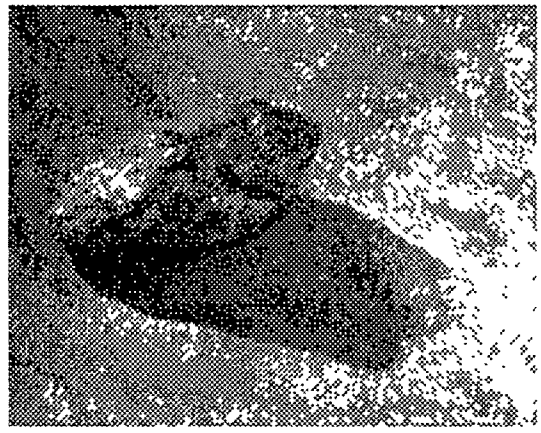


PLATE - 11



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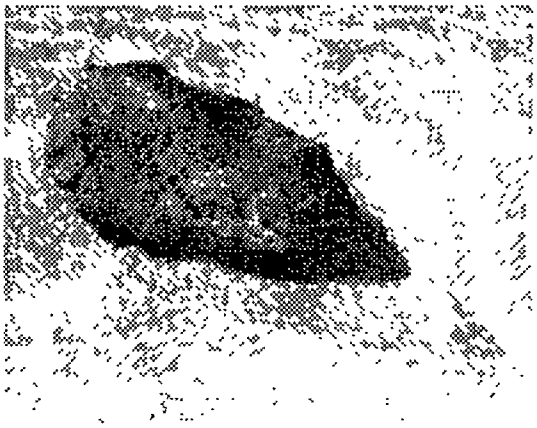

PLATE - 13

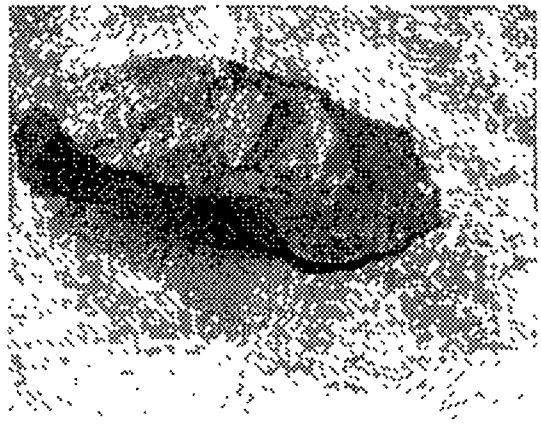

PLATE - 14

FOLK FOOD COGNITION AND FOOD CHOICE: AN EXPLORATORY EXPOSITION OF EMPIRICAL PERCEPTION.

Syamalkanti Sengupta,[1] Kanika Sengupta[2] and Prasun Kanti Kar.[1]

The villages *Amainagar, Kadamdihi,* Chakulia and *Capri are multiethnic in nature and numerically* dominated by the *Adibasis* like the **Santar**, the **Ho** and the Kharia, the population in known as "purbi singhbhumian". The other populations consist of **Dhibor, Khumbhakar, Lohar, Dom** and **Tanti** castes. The entire exposition of the work this time is confined to the cognition of *Adibasi folk* mainly of *Chakulia.* The terms 'folk' and the 'villager' are interchangeably used.

DIETARY PATTERN : PRESCRIPTION AND PROSCRIPTION

Dietary patterns of the *Adivasi folk* vary from man to man. Almost all the people mostly depend on rice as a staple food. According to the villagers stale rice has a medical value. To the villagers *Baske daka* (stale rice) is a cold food and in summer season it keeps the body cool. In winter season they take *Rohar daka* (dry rice) to protect them from cold. The villagers have their own concept of the prescription of the different food items. The villagers have a medical and logical concept behind the prescription of the dietary pattern. In the village ***Chakulia*** the villagers take meal in three times i.e., in the morning, noon and the evening (within 8p.m). But the old people and the children were exceptional. The old people generally take food only two times due to low digestive power.

Food proscription is variously idealized and observed with caution. Foods are avoided for a variety of reason, such as fear of illness or any other native happenings. They believe that in a normal condition a person can consume a normal food without any visible effect, while in conditions like illness, pregnancy, puberty etc. it affects the body and the diet is automatically modified (Arnott 1975). In the village, food supply is limited, avoidance of the available food can be detrimental to an individual's health. They think that the regular food should not be taken in time of illness. They think *Baske daka* should not be taken. They prefer hand made wheat bread or any other light food during illness.

Coming to the question of food avoidance at puberty and menstruation, it was observed that most of the avoidance was related to women and mostly at infant age (Clements *et.al 1977)* Before getting menstruation, during puberty, a girl is required to follow certain food avoidansee. She abstains from eating Jill / *Jilu (*meat) as far as possible. However, a girl is considered to have come of age when she gets first menstruation period. According to conversant elderly women or *Dhaima (*midwife) a girl in the menstruation period is thought of as polluted, and in this period she cannot be related with any religious activities. Women belonging to this condition avoid the consumption of *Nimbu* (lemon) and *jojo.* (tamarind), because consumption of those foodstuff is supposed to have different eftects on menstruation.

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Besides, at the beginning of the seventh or eighth month of pregnancy, the expectant mother is generally required to take light food only. The most of the aged females of the village believe that the milk, milk products are harmful for the healthy growth of the fetus and even it is dangerous, because the delivery of child may become difficult (Reid 1086). All types of *Lolo joma* (hot food) is generally tabooed from seventh or eight months of pregnancy. It is believed that consumption of hot food affects the *Demac* (temperamental) growth of fetus and also of mother. The pregnant women also avoid drinking of *Hanria* and *Mohua.* It is a belief among the female members of the village that drinking of *Mohua* and *Hanria* during pregnancy results the birth of a dead child.

Soon after the delivery of a child, there are certain food avoidances which the mother is expected to observe. She is not given cold food such as some fruits like banana, papaw and some vegetables like gourd, lady's finger etc. According to the villagers, the consumption of cold food affects the health of infant. If the mothers take cold food, the infants likely to suffer from cough and cold. They believe that breast milk determines the health of the infant. The mother therefore, has to observe caution in her dietary intake. There are a few food taboo observed in relation to the infant food. Generally, for eight months, the infant is not given any cooked food. All other foods are avoided till the time, the infants continue to depend on the breast milk. Both the milk of buffalo, goat and cow is highly avoided for the infants (Laderman 1981).

After the delivery (during lactation) certain food avoidances was also observed, temporarily upto one month by the mother. The villagers consider the consumption of meat to be dangerous for both the mother and the child for a considerable period (generally upto two months) during lactation. Some avoidance was also observed in lactating women in the consumption of vegetable food. Almost all the women belonging to the village avoid eating papaw, palm, wood apple, banana, etc. It was believed that all these items are generally 'cold' and if the mother eats these food, the baby would suffer from various diseases.

Preference of food: cultural and non cultural perspectives : The general idea of food that are variable in all societies, that some people prefers rice and some prefers wheat. This is the normal preference of food which is influenced by the culture of those people (Fitzerald 1986). How they entertain their guests by food items? how they make their special items? how they prepare their religious food offering to the God ? all are cultural part of preference of food. Again food items which are the basic need or those items which are naturally available and edible, are the non cultural preferences (Bell 1931).

In the village *Chakulia* rice is the staple food. Maximum number of **Santar** folk and the **Ho** folk takes *Baske daka / Baske maddi* (stale rice) as their regular food and it was their main preferable food. Sometimes they take *Lolo daka / Rahor maddi* (cooked but dry rice). The practice of taking *sia daka / souia maddi* (rotten rice) is absent here but it is used to make *Hanria* in many houses. The folk arrange different types of rice hierarchically **in terms of frequency of intake and preference.**

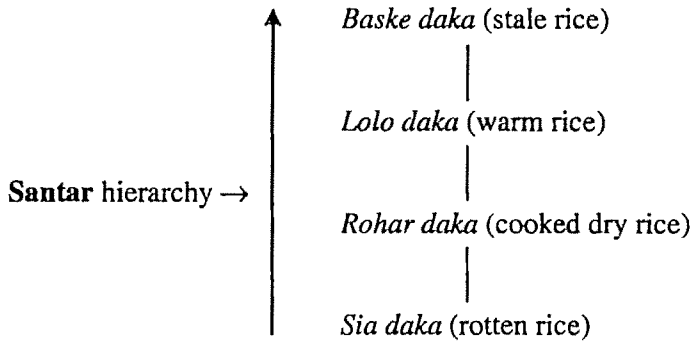


Figure 1 - The Santar hierarchical classification of various types of rice.

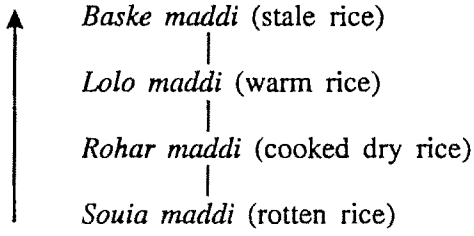


Figure 2 - The Ho hierarchical classification of various types of rice

Preferential perceptions about rice were viewed, which completely dependent upon frequency of intake. They were not willing to arrange them according to *Sibila* (taste). According to the villagers *Baske daka / Baske maddi* was preferred mostly because it could be taken without any vegetable curry or fish or meat. For intake of *Baske daka / Baske maddi* onion and salt were necessary. This advantage was also economically supportive. On the other hand the intake of *Lolo daka / Lolo maddi, Rohar daka / Rohar maddi* needed *utu* (vegetables), *jilu* (meat) or *haku* (fish) for consumption.(Sengupta 2003)

Preference of meat: The villagers consumed Jill / *Jilu* (meat) as non-vegetarian food. A very few people disliked the *Meromjill / Meromjilu* (meat of goat). It is the most preferable meat. This has also got the religious importance because it is sacrificed in *puja* (worship). People who does not like mutton thinks that mutton causes pain in the bone joints. Many people prefer *Sim Jill / Sim jilu* (chicken) than meat of goat. *Sukri jill /Sukri jilu* (pork) is the least preferable meat. Eating of raw meat is totally uncommon among these folks.

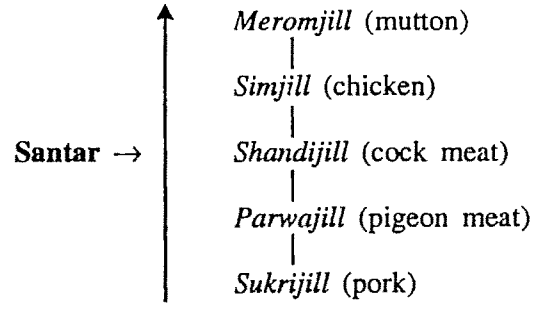


Figure 3 : Preferential hierarchy of meat among the Santar,

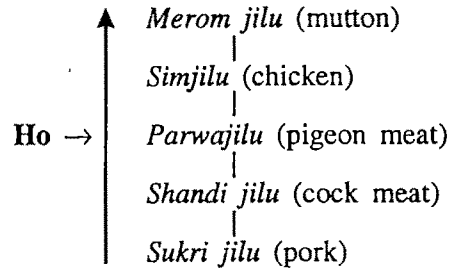


Figure 4: Preferential hierarchy of meat among the Ho.

Goat meat *(merom jill / meromjilu)*: According to the **Santar** and the **Ho,** goat meat which is locally known as *Merom jill* **and** *Merom jilu* are classified into two **types** : *Boida merom* and *Kith merom.* Generally they avoid the meat of *Boida merom.* According to hierarchical classification *Kith merom* is better than *Boida merom.*

The folk of the village classify the *Sim jill / Sim jilu* into three types i, e *Bir sim* (which is found in the jungle), *Orah sim* (with is kept in the house) and *Farum sim* (poultry chicken).

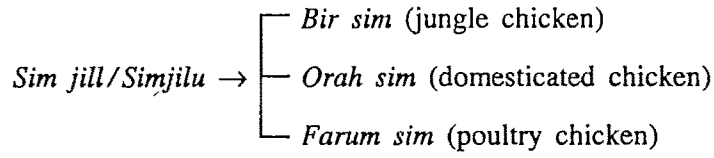


Figure 5: Classification of Sim Jill / Sim jilu

Hierarchically the villagers prefer *Bir sim,* the Orah *sim* and lastly *the farum sim.* The villagers classify *parwa jill /parwa jilu* into two types : *Asul parwa* (domestic pigeon) and *Patam parwa* (pigeon of jungle) .Hierarchically the villagers prefer *Asul parwa* than *Patam parwa*

Sukri jill /Sukri jilu is least choiced meat of the villagers. They classified *Sukri jill/ Sukri jilu* into two categories viz. *Kith sukri* (small) and *Sera sukri* (large). According to hierarchical preference they prefer *Kith sukri* than *Sera sukri.*

According to the **Santar** and the **Ho** of ***Chakulia*** village, fish is termed as *Haku* and *Hai* respectively. They consumed different varieties of *Haku / Hai.* Generally they prefer *Sera haku* (big fish) than *katij haku* (small fish). They pointed out that *Ruhi haku (Lebeo rohita)* as a tasty fish which was placed at the top in terms of *sibila* (taste). *Ruhi haku* had a *Herem* (sweet) *sibila* (Sengupta and Kar 2003).

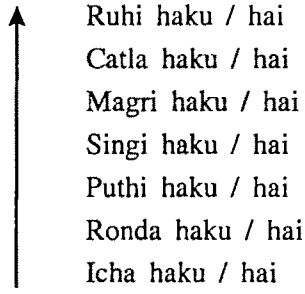


Figure 6: Hierarchical classification of Haku / Hai according to sibila / nagod.

The folk perceive their ability to grow food items in their *Burgay* (kitchen garden) and sometimes bought in *haat* (weekly market). The preference of *Arak/Ara* according to *sibila* (taste) is as follows :

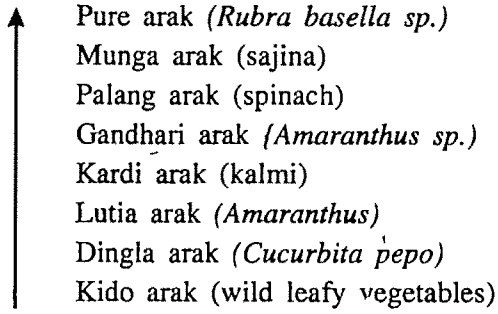


Figure 7 : Hierarchical classification of Arak among the Santar.

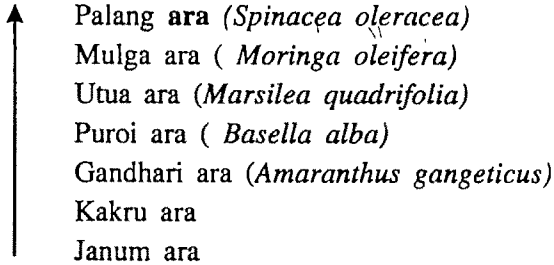


Figure 8 : Hierarchical classification of Ara among the Ho.

Preference of fruits : More or less all the villagers like to eat fruits according to availability. The **Santar** termed the ripe fruits as *Bili* and the **Ho** termed as *Mata*. Generally they prefer *ul* (mango), *kaira* (banana), *mandar* (custard apple), etc. A list of fruits are given below:

List of fruits	Santar	Ho
Mango	*Ul*	*Ul*
Banana	*Kaira*	*Mata kila*
Jack-fruit	*Kantar*	*Mata Kantar*
Custard apple	*Mandar*	*Ata*
Date palm	*Khejura*	*Kita*
Plum	*Didari*	*Bakra*
Guava	*Sukhram*	*Ambrut*
Lichi	*Lichu*	*Lichu jaw*
Berry	*Kuth*	*Kuth jaw*
Flam-fruit	*Tale*	*Tarajaw*
Papaiya	*Pipa*	*Bindidaaro*
Wood apple	*Sejo*	*Beldaro*
Cucumber	*Delta*	*Taiyar*
Hog Plum	*Ammra*	*Aambau*

Dietary habit and gender role: There was not much division of labour among the villagers of ***Chakulia.*** On the contrary , a male **Santar / Ho** or a **Munda** is as adept in household chores as a female. He if situation warrants, can prepare food for the family. He can bring water from the well and can also work on the grinding mill. Similarly, a female can also take up the role of male, cut the branches of tree ,collect fuel and keep vigil on the crop. However, there is a taboo on the part of a female not to plough the field . It is the exclusive job of the male (Sengupta and Sengupta 2002) . In the realm of food there is no differentiation in the consumption of food stuffs. The varieties of food being limited, both male and female take the same food.

Differentiation in the number of meals taken by the gender is also absent among the villagers. Generally , the villagers take three meals a day . In the morning they take *Baske daka* (soaked rice) or *maddi* or *Lolo daka* (warm rice). *Lolo maddi* (cooked warm rice) with onions and chillies and sometimes with *utu* (green vegetables) is taken . The mid day meals are taken when part of the labour or work is over in the field.

The third food is taken in the evening (within 8.30 p.m). The meals are standardized by the folk. During lean periods of the year, it becomes difficult for a family to manage even a single meal. In good seasons, however, three meals are taken.

However , there is a definite hierarchy in the service of food. Infants and children are served first before anybody takes food. The second in the hierarchy comes the male members of the family. The females take food in last turn. This standardized hierarchy of food serving may also vary with the change in the schedule of work in the forest or at the site of working.

Daily consumption of food and frequency of intake : Frequency of taking meal and quality of food depend on economic ability and availability of food stuff. Therefore , an economically well-to-do family is able to provide various types of food (Aykroyd, et.al 1966). It was rightly said by Doshi (1995) that "the standard of living of a family is judged very often from quantity and kind of rice eaten,....". In addition it may be said that the frequency of taking of meal *reveals that the folk take food generally in the morning , noon and evening times.* It is clear that most of the villagers can afford meals three times and variations in the type of food supply are also seen . Tiffin is not a regular practice (Doshi 1995).

***Daily consumption of food in relation to economic standard*:**

A look on the daily consumption of the villagers shows the following:

A. **Villagers of above subsistence level**:

1. Morning : Stale rice with onion and chilly, vegetables (leafy) , sometimes bread, and occasionally milk or tea.
2. Noon . *Baske daka* (stale rice), *utu* (vegetable curry) meat or fish ,pulse curry, etc
3. Evening : *Lolo daka* (warm rice) , vegetable curry ,pulse curry and sometimes meat or fish.

B. **villagers of subsistence level**:

1. Morning: *Baske daka* (stale rice) with onion and chilly, vegetable curry retained from last night.

2. Noon : *Baske daka* (stale rice) with onion and chilly, vegetable curry, pulse curry and sometimes meat or fish.
3. Evening : *Lolo* or *Rohor daka* (warm or cooked rice) with onion and chilly, vegetable curry, pulse curry.

C. **Below subsistence level:**

1. Morning : *Baske daka* (stale rice) with onion and chilly, *hanria* (rice beer)
2: Noon : *Baske daka* (stale rice) with onion and *chilly hanria* (rice beer), vegetable curry, rarely fish or meat or pulse ,etc.
3. Evening : *Lolo daka* or *Lolo maddi* (warm cooked rice), vegetable fry or *utu* (vegetable curry).

***Hierarchy in the service of food among the villagers*:**

H
i
e
r
a
r
c
h
y

Gidra (infants and children)

Asuhadam (sick persons)

Koda (male members)

Baba hor (elderly man)

Ayo hor (elderly female)

Kudi (female members)

Food classification : The folk classified the available food into two categories :

i) Cooked food and
ii) Uncooked food.

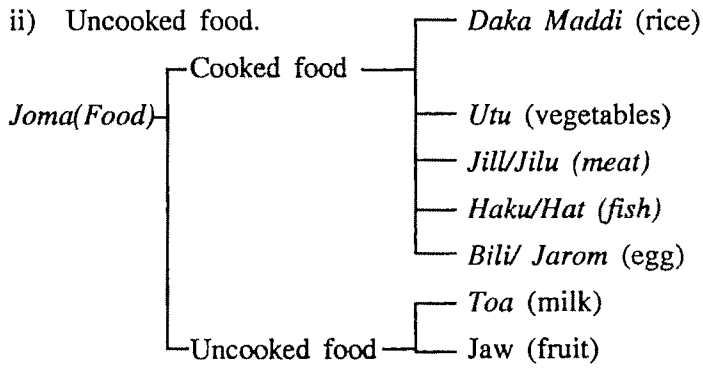
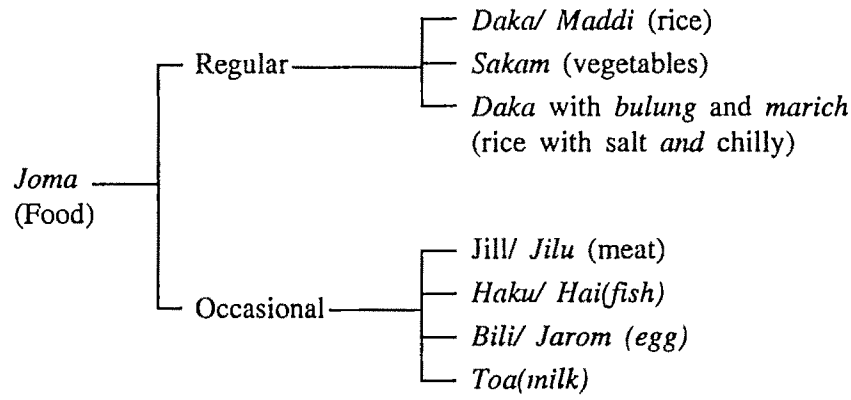


Figure 9: Food classification of the villagers

Regular and occasional diet: The basic pattern of diet of the folk is same. But different members take different food at the time of their own traditional occasions. As these people live in the same area, their food habit is also very nearer to each other even though little differences exist. The basic food types and some categories are shown in the figure 10.



Figre 10: Regular and occasional categories of food

Regular food : The regular food of the folk is very simple. Maximum people takes soaked rice with onion and chilly. Very few people prefer bread in winter season. But it can be said that rice is their staple food. As regular food rice, vegetables are taken by the villagers either in boiled form or as curry.

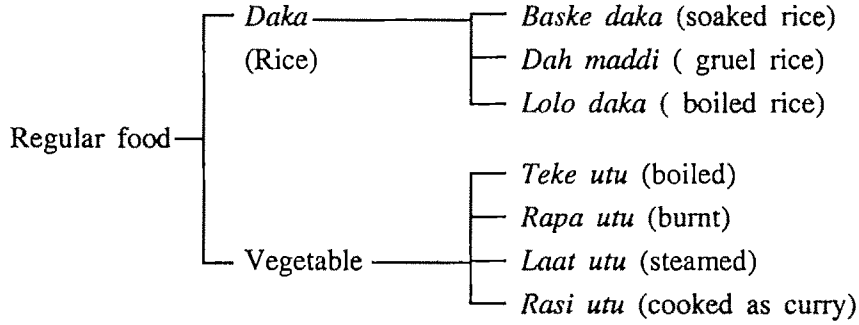


Figure 11: Basic categories of regular food

In the **Santar,** no definite lexeme was used to denote the regular and occasional variety of food but they could classify food. In Santali language the food is termed as *Joma.*

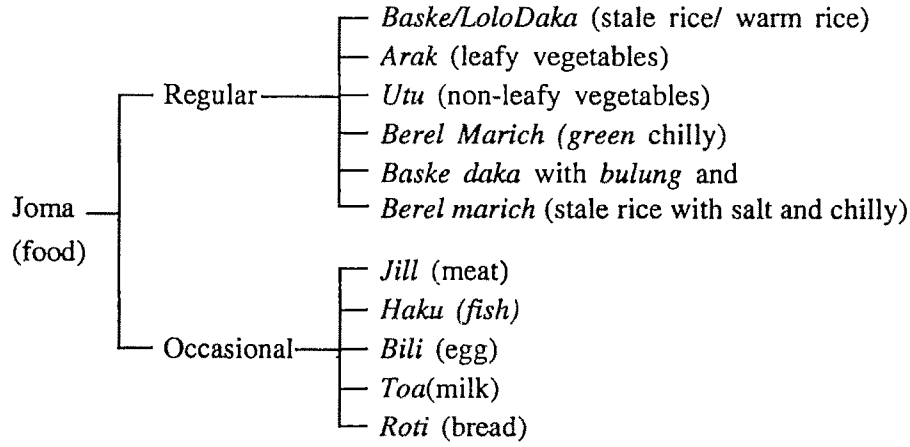


Figure 12 : Basic categories of regular and occasional food among the Santar

The **Ho** classify different items of food consumed by them. They denote locally *Jom*, meaning food.

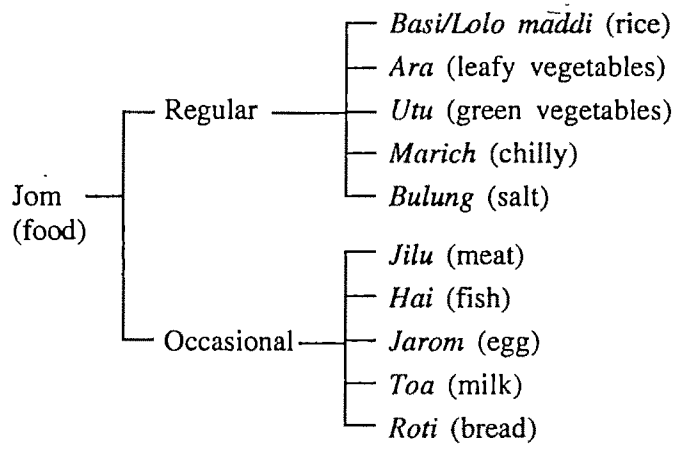


Figure 23: Basic categories of regular and occasional food among the Ho

Entertaining perspective of food : Food acceptability has an important distinction from food consumption . Food acceptability denotes the consumption of food accompanied by pleasure. According to the villagers , if a guest comes to a family, he will be served with different dishes (Bennett 1943). Though they take *baske daka (stale rice)* as their food regularly yet when a guest comes to their house, every member of their family along with the guest takes *Lolo daka/Lolo maddi* (dry cooked rice). They never give stale rice to their guest. Different types of curries are also served. *Merom jill /Merom jilu* (goat meat)or *Simjill or simjilu* (chicken) may be served if the situation permits. The *sukri jill / sukri jilu (pork)* is seldom served to him in financial crisis. Food becomes the symbol of prestige to the villagers.

Food in Marriage: According to the villagers opinion , in most of the cases feast is arranged in both the houses of the bride and the groom . The food served on the occasion of marriage is something different from the daily food. Some well-to-do families in the village *Merom jill /Meromjilu* (goat meat) or *sim jill / sim jilu* (chicken) is freely used. In this ceremonial feast , pulses, vegetables and leafy vegetables are also consumed.Only the well-to-do villagers offer sweet to the kinsmen and relatives. *Hanria* (rice beer) or *Mohua* also are consumed by the villagers.

Food in Death : In the village *Chakutia,* according to the Santar tradition after the death of a family member *Daka,* and Ara *utu* (vegetarian food) is restricted for 11 days. During this time generally they take *baske daka* with salt and chilly and sometimes vegetable curry . But in case of caste people, a funeral feast is given by the dead person's family after the day of the cremation . Boiled rice with vegetables is given to the village people as feast and the close kinsmen residing in the neighbouring villages.

Food in festivals : In various festive occasions the villagers enjoy with different types of foods and drinks. Kalipuja, Durgapuja, are the general religious festivals of these people. Beside these, Makar sankranti, Laxmipuja, Badna parab (for Santar) are also important festivals. The Santar eat their favourite *hanria(rice* beer) and *Mohua* (liquor) in every occasion. But like the Santar, the Ho, the Munda and the other caste people are also very

fond of *Hanria* and *Mouha.* Meat, fish and egg are their main food in festive occasion.

Figure 14 : Chart of occasional food taking among the villagers

Name of occasion	Santar	Ho	Munda	Caste people
Makar Sankranti	Meat, fish, egg with *mouha* and *hanria*	Meat, fish, egg with *mouha, hanria*	Meat, fish, egg, with *mouha, hanria*	Meat, fish, egg, with *mouha* and *hanria*
Kali puja	Rice with meat curry, fish curry and *hanria* or *mouha*	Rice with meat curry, fish curry and *hanria* or *mouha*	Rice with meat curry. fish curry and *hanria* or *mouha* sometimes with fish & mouha	Rice with meat curry, fish curry and *hanria* or *mouha* sometimes wine
Baha parab	Rice with fish meat	Regular food	Regular food	Regular food
Laksmi puja	Rice with vegetable curry, mouha and *hanria*	Regular food	Regular food	Rice with vegetable curry
Vishya Karmj puja	Regular food *mouha* and *hanria*	Regular food	Regular food	Rice with meat curry or fish curry, *hanria* and mouha
Durga puja	Regular food sometime with fish, meat and *hanria*	Regular food	Regular food	Rice with vegetable curry, meat, fish and sometime egg

Food and cultural perception: Chakravarti (1984) in one of her articles relates diet and disease in terms of culture and food use. The socio-cultural factors, as she observed determine the food production and its use. She subscribed the view that India with its wide range of physical, cultural and economic conditions and food production, offered a large variety of diet preferences, which not only vary with age, sex, religion, caste and economic conditions in the same area, but which also encourage the variation from place to place producing distinct regional dietary patterns.

Chakravarti (1984) in her research observes that the consumers of foods in India do not have any scientific basis. They mostly go by folk beliefs and cultural compulsions. The

food culture in India, she argued, largely responsible for affecting the nutritional qualities of diet. The traditional belief that" certain foods are heat producing or 'hot' and should not be consumed in summer and some other foods are cold producing or 'cold' and should not be consumed during winter, substantially delimits the use of foods".

However, it must be accepted that the Indian and foreign geographers have tried to look at the culture patterns of food, food habits and food ways and above all, food ideology with reference to spatial distribution. The folk people of ***Chakulia*** exhibited a dietary pattern with respect to their economic condition, ecology, food resources and management during regular consumption, festive occasion and entertainment of kinsmen.

Food and biological perception : The **Santar**, the **Ho**, the **Munda** explained that the food is a biochemical process and product, which sustains life. Why you eat? Because I am hungry? How you feel that you are hungry? I feel cramps in the belly, I feel headache and I become weak. Do you think that you take food to avert weakness? These were the usual reply of the folk in question. Not always, sometimes I take food by mere habit. Do you believe that food gives strength to the body? Yes I feel so. These views reiterated that food was not merely the source of bio-chemical needs, it also has a cultural dimension which helped a person to determine his food and nutrition habits and choices. One of the most interesting visible ways in which men and women expressed their cultural differences were through the food they eat or do not eat. Surely each human being had certain biological needs which must be fulfilled by some nutrients which were the same for all people. Yet the food that supply the nutrients were as different as the nutrients essential for the survival and existence of people as human beings and cultures which they adopted in accordance with their environments (Fitzgerald 1986).

People must eat what they need but in real life, they choose what they like from the available edible stuff. The health is maintained through the choices made out of available food sometimes unconsciously. The main purpose of the process by which food was prepared for consumption, either by cooking, or by food technology to make it palatable (Foster,et.al. 1987). It was a big question how these folk (the **Santar,** the **Ho,** the **Munda)** planned for appropriate healthy food with their own wisdom and knowledge? Complete knowledge of ethnoscience and observations through trial and error they had planned for satisfactory diet and sustained life.

Folk, food and ecology : Food habits vary from place to place and from folk to folk society. Getting of food and food practices are the cultural aspects of life and thus highly variable between different societies. Every community has its own ecological setting and thus the natural food provided by the environment also variable in a considerable degree (Sengupta 1998). Hence ecology plays a major role in food practices of a particular community. Ecology provides various kinds of natural resources which are explored by man of a particular community having such ecological surroundings. Food materials constitute a major portion of such natural resources. These area may be roots, tubers or fruits and flowers. In many folks, people sometimes survive completely depending upon natural food given by the ecology. Again the food production of an area or the production of crops depends upon the ecological characteristics. These productive rate as well as the types of crops all depend upon the ecology of a particular area. Ecology also influences the health pattern of people and their choice (Jerome,et.al 1980). The said folk life in hot area generally preferred *Riya joma* (cold food) which keeps their body cool.

(i) ***choice of food :*** Here in the village, the people generally preferred those foods which were normally available in the nature or easily producible or cheap in the market, though they seldom depend on readymade food of market. The choice again is influenced by their concept of health i.e, they prefer those food which they think suitable for the betterment of health. Though most of the people did not take milk as a preferable drink but they have the knowledge that milk was necessary for maintaining good health (Watkin 1983). Generally pork is avoided because it contained fat. Thus *itil* (fat) was considered unhealthy. They took *Baske daka* (stale rice) as preferred one and well accepted because they considered that this would keep their body cool in the intense heat of that locality.

They had some of their own prescription about vegetation which they prescribed for some specific purposes. But in some social, religious and other ceremonial occasions they had their own special preference for ecologically available food resources.

(ii) *Availability of food* : Preferable food are generally available in the ecology and people use them as natural food like fruits, roots, tubers, flowers and so on. Some of the fruits are used by them which are especially available only in this ecology. Normally fruits, roots etc. are not taken as cooked food, but there are plenty of vegetables which they take as prepared or cooked food, a number of cereals are used as cooked food like rice, wheat and maize. Most of the pulse like pigean pea's, green gram, and lentils are taken. Meat are also available mostly mutton and chicken. Fishes with large varieties like Ruhi, Catla. etc. is taken with some elaborate principles of preparation. With the changing climate the food of these people also changes. Many people have the idea that stale rice or other cold food should not be taken in winter and rainy season. During that time dry food is better. In summer, people prefer *Baske daka* (stale rice) and in the winter season people prefer *Lolo daka* or *Rohar daka* (warm dry rice).

(iii) *Rejection of food* : They usually reject pork for health consideration mostly by younger children and aged persons. Prawns are also avoided. Generally they avoid some itchy and windy food. They do not prefer much spicy food. *Suia daka* (rotten rice) is also rejected by keeping the concept of health in mind. Generally bread are avoided. Country liquor are rejected by the aged persons and young children. Beef is also not preferred by the people due to some religious and personal causes of preference. *Suia* Jilu (rotten meat) of dead animal which are boiled or half boiled are rejected for hygienic purposes.

(iv) *Experimental Perception on New Food:* New experimentation of any food preparation is not yet tasted by the villagers though they are able to purchase those foods. They always follow their traditional method of food choice. Bijay Bandra who works in the copper mines is sound in his financial position. But he never tasted the fast food and industrial food (i.e complan, horlics etc) which are available in the market. But he likes their traditional food instead of fast food. According to the villagers opinion, they are not interested to make any experiments on fast foods.

Anthropology* of *food: summary and conclusion

Chakulia is a village in the district of East Singbhum of Jharkhand and it is on the western side of Subarnarekha river. It is a multiethnic village. The village population consists of both tribal and non-tribal folks. All the castes and tribal communities do not exist in the same economic position and also do not earn their livelihood from the same set of resources. The villagers are of two agrarian classes:

i) Land owner and

ii) Land less.

The landowners utilize their resources and land less persons utilize them for their subsistence. The various resources in an around the village which the villagers utilize in the shape of pottery, distilling of country made liquor, selling of mouha flowers, work for stone-breaking in *Pathar Khadan,* basketry, shop keeping, service in copper mines(Bhatt 1977) . In this present work different social, cultural, economic aspects of life are discussed here in the light of food materials. The work related to the fact that there exists different kind of preference of food among the members of folk but the basic preference, that is, *Baske daka* (stale rice) fairly homogeneous throughout the people. There are various customs, rules, regulations that are followed by the people of ***Chakulia,*** Various kinds of classifications are done among the food materials on the basis of different social, religious, economical and other aspects of social cultural Anthropology. They have very poor concept of nutrition and they define this concept of health and nutrition in their own way.

Getting of food is a major aspect of human efforts. Production and supply of food are always very important among these folk societies like many other. The need for food directed all kinds of economic activities. The food also indicated that the village population centering round food production, food provision, food preparation, food intake exhibited a kind of culture, which became the symbol of the folk. The two factors ecological and environmental were responsible to determine the range of potential food(Hyndman 1986). Culturally they were accustomed to indicate *Baske daka / Baske maddi* (stale rice) was preferred rather than *Rohar maddi* (dry cooked rice). The folk visited their resident friend's house and exchange *Hanria* (rice beer) as matter of social obligation and friendship. The whole day food habit chart expressed the food choice mainly from *daka / maddi* (rice) and arak / ara (vegetables). Though this folk ate different kinds of animal protein food such *as Jill or jilu* (meat), *haku / hai* (fish), and *billi / jarom* (egg) but during observation the presence of these kinds of items seldom were found which indicate that the economic factors were responsible for food choice and thus diet and nutrition.

According to the villagers, they take food and drink to keep their bodies fit for work. If they do not take food regularly according to their need, they would become weak and sick. They become satisfied when take their food in need. They also consider the fact that they take food as a habit rather than for hunger. It was a customary use that they took their food in the morning, midday and at the night (within 8 P.M.).

The villagers believed that their health depend on the feeling of hungriness. They think if they go without food at the time of need, they will become weak and ill. Most of their food habits go with the tradition and food ways (Young 1986).

The villagers classified the food into hot and cold. Hot food are believed to produce more heat in the body. Cold food are supposed to lower the heat production. They think that most of the foods are hot or cold. *Mohua,* meat, fish, egg, etc. are considered as *Lolo* (hot food) and *Baske daka / Baske maddi,* banana, brinjal, plum, papaw, etc. are considered as *Riya* (cold food). In *Santali* language the hot food is termed as *Lolo* and the cold food is *Riya.* Again, according to the folk people, some food are itchy and some food are windy. In *Santali* language the itchy food are termed as *Babat.* Prawn, egg, pork etc. are the example of itchy food and gourds, ginger, raddish, etc. are the example of windy food According

to the villagers, most food are acceptable only when they are cooked. Except for some fruits and vegetables, most of the food is cooked. The cereals used by the villagers were limited in number. Rice cultivation is much popular among the villagers. It is staple food among the villagers. The villagers do not cultivate the wheat. It is not there staple food. The entry of wheat among the villagers is quite recent. Some villagers grow maize in their field. In *Santali* language the maize is termed *as jonra.*

In the village, the **Santar** and the **Ho** categorized eight items of food . *Huru* (paddy), *Arak / Ara* (leafy vegetables), *Utu* (green vegetables), *Haku / Hai* (fish), *Jill / Jilu* (meat), *Bili / Jarom* (egg), *Toa* (milk) and *Jaw* (fruits). This items in different combinations and forms they consumed. Most of the villagers do not consume milk. The villagers also classified the food into vegetarian and non vegetarian. In *Santali* language the leafy vegetarian food is termed as *Ara sakam* and the non vegetarian food is termed as *Mesasane.* The non-leafy vegetable food is also called *Utu.* The vegetarian food includes rice, pulses, etc. and the non vegetarian food includes meat, fish, egg, etc. The dietary habit depends on body requirement. The villagers generally take their meal in the morning, midday and a little after the evening. But the old and the children do take their food when they feel hungry. In case of children intake of foods may exceed for more than six or seven times. The children have no fixed time for taking their food. But the very old people take their meal two times a day instead of three times. Generally the old man avoids to take pork, goat meat as they feel uneasy to digest these meat for their low capacity of digestion. Maximum number of people took stale rice as their regular food and it was their main preferable food. The practice of taking *Sia daka / Souia maddi* (rotten rice) was absent here. Stale rice was preferred most because it could be taken without any vegetable curry or fish or meat. According to the villagers, *Jill / Jilu* (meat) was consumed as non-vegetarian food. Goat meat was most preferable meat and then chicken. Pork is the least preferable meat among the villagers. Eating of raw meat was totally uncommon among the villagers. The villagers consumed different variety of fish. Generally they take *Sera haku* (small fish). More or less all the villagers liked to eat fruits according to availability. The **Santar** termed the ripe fruits as *Bili* and the **Ho** termed as *Mata.* Generally they prefer Mango, Guava, Jackfruit, Banana and Wood apple. In classification of plant foods the focus is on the part that is edible, e.g, fruit and root. Thus food classification is based on the part that is eaten (Rudder 1978/9:354).

There is a definite hierarchy in the service of food. Infants and children are served first before anybody. Then comes the sick, male members and the females take the last turn.

The basic food of villagers is same but different people take different food in time of their own traditional occasions. The basic food types of the villagers can be divided into categories such as regular food (rice, vegetable, etc.) and occasional food (meat, fish, etc.). According to the villagers, if a guest comes to a family, he will be served with different dishes of food. It is a matter of prestige to the villagers. Generally they take stale rice but when a guest comes to their house, they serve *lolo daka* (warm rice) to the guest along with meat or fish. It is a customary use to serve rice and meat to the guest. To welcome guests with different food items is a truly social aspect of life.

The choice of food was generally restricted to seasonal availability through cultivation and limited collection. They were concerned about whether the food was uncooked, hot

or cold, sweet or sour as about what food was available. The classification of *Jill / Jilu* was closely parallel to that of animal kingdom. The hot-cold classification of food assumed importance by virtue of symbolic expression of its effect on body. This classification of hot and cold often served to control the consumption of food which might cause physical indisposition (Manderson 1986). The folks in question had a distinct conception of taste. The cognition of the *sibila* (taste) was reflected through various items of food consumed by them regularly and occasionally. In general, regarding the food habit of the *adavasi folk,* reflection of a standard image is maintained throughout, during the time of good supply. The traditional habits are continually followed. Similarly, observations show that there are several common food items in the same ecological region. Levels of living are low for the masses of poor folk. Regarding protein intake a tribal adult takes not a better amount on average. On the other hand the villagers gets highest amount of carbohydrate than balanced diet. In such the village people not only have to go for food but are dependent on its yearly and seasonal availability, which therefore affects their movements. However, the distribution and amount of the foods which they eat is a controlling factor in distribution. Majority of the poor villagers are to have the limited opportunity in the variation of food. It is seen that the *adavasi folk* as well as the caste people never like to consume wheat and milk. In our opinion it is a must to teach them the better method of farming of a better quality of food. Again, two more additions are being suggested for the villagers to improve their dietary condition; firstly, all the homestead land must be provided with a kitchen garden, secondly, a hygienic and healthy kitchen room should be provided to every house. Regarding remedies one must suggest for the improvement of food standards; faulty selection of food, monotony in food intake and lack of knowledge have caused the nutritional deficiency despite the prime factor of poor economic stability.

Despite the prime necessity of life, the basic need of hunger, food has determined the growth, health and efficiency of the *adavasi folk.* At the same time some selected food has become symbols for special occasion. Again, social status, religions practices have influenced the selection of food. But it is dependent on the economic condition upon which the quantity and kind of food are dependent.

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OBSERVATION OF MALNUTRITION AMONG SCHOOL GOING GIRLS OF RANCHI

Ratnawali and Kanchan Roy Postgraduate

Abstract : The present study revealed that Ranchi girls in general demonstrate good nutritional status. They are having low incidences of stunting and virtually absence of under nutrition in terms of weight for length. Though the cases of wasting are much more prevalent in Rajpoot girls, the rest of the populations also suffer at certain age groups. Which may also be attributed to the accelerated growth during these years. However little occurance of stunting in later years and that of wasting in prepubertal to adolescent age make, it important to take proper care of the growing girls because faultering at these crucial years may cause unrepairable loss to their wellbeing.

INTRODUCTION :

One of the main factors that lead to the poor health among growing children may be attributed to the faulty nutritional intake which causes the population to suffer from Malnutrition. "Malnutrition" is defined as a pathological state resulting from a relative or absolute deficiency or excess of one or more essential nutrient (Jelliffe, 1996). It can be classified into : **Under nutrition :** When the consumption of Inadequate quantity of food over an extended period of time results in underweight. **Specific deficiency :** Signifies the relative or absolute lack of any particular nutrient. **Over nutrition :** Consumption of excessive quantity of food over an extended period of time results in obesity or overweight. **Imbalance :** It refers to the disproportion among essential nutrients with or without the absolute deficiency of any nutrient.

Assessment of nutritional status thus gives a clear picture of child's health. Apart from clinical test there are certain anthropometrics measurements like weight and height which provide information upon the nutritional status. These are obtained through certain age dependent and age independent indices like height for age, weight for Age, weight for length, Body Mass Index, Korperfulla index etc.

The present study also takes into account of weight and height measurements of the six endogamous population (Munda, Oraon, Kurmi, Rajpoot, Kayastha and Brahmin) of the growing girls of Ranchi and assess their nutritional status with the help of three indices namely height for age, weight for age and weight for height.

As the subject "Assessment of nutritional status" is of global significance; It has been widely studied by various scholars all over the world (Jelliffe 1996, Cameron, and Hiernaux 1981, Pelletier, et al 1975, Ferro Luzzi 1992, Waterlow 1972, 1973), In our country also the scholars like Garj, Bhatnagar & Chopra (1997), Bhandari and Gupta (1994), Sen (1994), Sharma & Gupta (1993), Gopalan etal. (1987), Sidhu et al (1993) and many other have studied the phenomena. However, very little or stray cases of such study has been found in this part of the country. Among them the study by Hussain & Roy (1997) among primitive tribes is note worthy.

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Present work is thus an attempt to observe the malnutrition among the school going girls of Ranchi in the age groups of 5-18 years.

AIMS & OBJECTIVE

The study is aimed at :

1. Assessment of nutritional status among the six endogamous (Munda, Oraon, Kurmi, Rajpoot, Kayastha, Brahmin) communities of school going girls of Ranchi through three indices namely Height for age, weight for age and weight for height.
2. To identify the vulnerable age prone to malnourishment.
3. To compare the present state of nutrition of these population with that of Harahan's girls standard and to find out the prevalence of stunting and wasting if any.

MATERIAL & METHOD :

A total of 2051 girls in the age group of 5 to 18 years were taken from various schools of Ranchi. The girls belonged to six endogamous groups as : Munda, Oraon, Kurmi, Rajpoot Kayashtha & Brahmin. Munda, Oraon belongs to Tribal community whereas rest of the groups belonged to non tribal community. The composition of various endogamous groups in the present work is presented in Table-I. Table-II demonstrates the number of subjects in the different age groups.

The data for the study was collected by stratified sampling method. Strata was identified as age groups between 5 to 18 years. The sample for each age group was taken at random.

Age was recorded in years and month. Six months and above were termed as one year. Thus if the age of the subject was 8 years and 5 months it was counted as 8 years. Six months and above were counted as a addition to one more years to the original age in years. Thus 8 years and 7 months were counted as 9 years. Age was recorded from school register and crosschecked by the subjects. Doubted cases were excluded from the study.

Height and weight measurements were taken as per the standard Anthropometric technique of Martin and Saller (1957) with necessary modification in accordance with I.B.P. Hand book number 9 (Weiner and Lourie 1969).

For the Purpose of the study the mean data for each age group in all the six population groups was calculated and was compared against the Harvard Standard (Stuart & Stevenson 1959). For the height for age value, 90% of the Harvard Standard was compared with the population groups under study to find out the stunting. Weight for age index of weight for height revealed the existence of Malnutrition and was compared upon 80% of the Harvard Standard. (Nath 1996).

RESULT

It is evident from the Table III the length for age values reveal that all the six population register a gradual increase with age. It show a nearly parallel value with the Harvard Standard upto 11 years, barring a few ones, whereas, from 12 years onward the difference between them widens but still the population qualify the 90% of Harvard Standard, with the exception of few age groups in Munda (9 years), Kumari (14, 15, 18 years), Kayastha (11 years) and the Brahamin (5 & 6 years).

In Table IV, weight for age values have been presented. All the population groups under study comes below the Harvard standard but still maintains 80% of the Harvard Standard

in weight, except Rajpoot girls where wasting is observed from 9 to 18 years. Rest of the population recorded sporadic cases of wasting as Munda in 9 years, Oraon in 8, 9 & 15 years, Kurmi at 9 and 10 years, Kayastha 11 years and Brahamin girls at 5 years of age.

Table-V presents the weight for height value. It is observed that all the populations attained the 80% and more value up to 11 years and thereafter they exceed the Harvard Standard.

Table-VI & VII presents the faultering age group of various population, with respective deficit in the measurement compared with the Harvard Standard.

The length for Age value in Table-VIII indicates that in the Tribal Communities (Munda & Oraon) above 90% of standard value is achieved except at 9 years in Munda girls, where the case of stunting is observed.

In the non tribal community groups stunting is noted at 5 and 6 years in Brahamin girls, 11 & 17 years in Kayastha girls and 14, 15 and 18 years in Kurmi girls. The Rajpoot girls show above 90% value at all age groups. The cases of stunting are thus very few but the post pubertal ages are vulnerable. In Brahmin girls however, the stunting has been noticed at initial years and seems to be alright at later ages.

The weight for height values show that all the six populations under study suffer from wasting at few age groups. It is highest among Rajpoot girls where less than 80% of the standard value is reported from 9 to 18 years. Among Tribals the Munda girls show better value than Oraon girls with only 9 years showing the nominal deficit whereas in Oraon girls 8, 9 and 15 years have less than the 80% of standard value. Among the Non-Tribal groups wasting is rampant with Rajpoot girls in (9-18) and at 9 and 10 years in Kurmi girls and 11 and 5 years in Kayastha and Brahmin girls. Rajpoot girls also show maximum deficit, Sometime more than 10% (15-16 years) and therefore require special attention (Table-VI). Wasting seems to be prevalent in later years but more precisely from 9-11 years.

From Table-V assessment of malnutritional status can be attempted. All the populations seem to be at par with Harvard Standard, or at least greater than 90% of the said standard (except at 9 years is Rajpoot girls). It is also observed that more (5-8 kg) than standard value is recorded after the age of 11 years among all the six populations understudy.

DISCUSSION

The observations made upon the date available for the six populations, points that the prevalence of stunting due to malnutrition is not common with these endogamous groups. It is present only at 9 years in Munda, 14, 15 & 18 years in Kurmi girls, 11 & 17 years in Kayastha girls and 5 & 6 years in Brahmin girls, where as virtually absent in Oraon and stunting are recorded in the later years, it seems to be vulnerable in terms of nutritional intake.

Case of wasting are recorded in almost all the populations at different ages. It is however alarming in Rajpoot girls where its presence is noted from 9-18 years. Among other populations Munda demonstrated it at 9 years, Oraon at 8, 9, 15 years, Murmi 9, 10 years, Kayastha 11 and Brahmin girls at 11 & 5 years respectively. Most of the cases fall in the prepubertal to adolescent stages.

The height for weight values are quite good among Ranchi girls. They have reported 90% of the Harvard standard and more than standard Harvard value in the post pubertal

ages. But here also Rajpoot girls have lower percentage values than their counterparts in the prepubertal ages.

The findings of the age dependent Indices of this study is also supported by the study conducted upon the same population by one of us (Ratnawali, 1999) through age independent indices like : Body Mass Index (BMI) and Korperfulle's Index. As regards to Body Mass Index she found according to BMI, mild undernutrition prevailed up to 14 and 15 years in Munda and Oraon girls where as upto 10, 13, 14 & 16 years respectively in Kurmi, Kayastha, Brahmin & Rajpoot girls. But 8 and 16 years in Munda, 5 years in Oraon, 9 years is Rajpoot, and 6 years in Kayastha falls in the same severe under nourished status. In addition, the Korperfulle's index showed mild under nutrition in 6, 10 and 11 years in Munda, upto 13 years in Oraon and Rajpoot girls and 6, 9, & 12 years in Kayastha girls. Severe under nutrition is also found for 6-10 years in Oraon and 9-12 years in Rajpoot girls.

The overall good nutritional status is again confirmed by the weight for height values which in thought very much objective in the ascertainment of their current nutritional status. In the present study the Ranchi girls (Oraon, Munda, Kurmi, Rajpoot, Kayastha and Brahamins) have reported 90% of the Harward standard and more.

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TABLE - I

Number and percentage of tribal and non tribal girls constituting the study.

Endogamons groups	Number	Percentage	
Tribal	Munda	397	19.34
	Oraon	409	19.93
Non Tribal	Kayastha	288	14.06
	Rajpoot	338	16.47
	Brahmin	308	15.00
	Kurmi	312	15.20

TABLE - II

Number and Percentage Distribution of girls according to age.

Age in years	Number	Percentage
5+	114	5.55
6+	120	5.84
7+	144	7.01
8+	146	7.11
9+	149	7.26
10+	164	7.99
11+	150	7.30
12+	175	8.52
13+	181	8.82
14+	166	8.08
15+	136	6.6
16+	138	6.72
17+	125	6.09
18+	144	7.01
All Ages2052	100.00	

TABLE - III

Height for Age in different population

Age in year	Length (cm.) measurements of different populations						
	90% of Harvard Std.	Munda	Oraon	Kurmi	Rajpoot	Kayastha	Brahmin
5	98.00	108.87	110.89	103.94	106.91	105.44	92.27
6	102.30	109.47	106.85	117.69	114.55	114.87	99.52
7	105.30	128.83	118.23	120.61	121.52	116.28	115.90
8	107.55	113.93	115.75	120.86	126.24	124.19	115.67
9	117.55	116.27	121.32	122.35	130.20	131.90	136.67
10	120.60	135.92	131.61	122.35	130.35	127.45	137.17
11	123.75	139.95	136.51	135.01	134.27	122.17	143.37
12	131.40	144.31	142.42	138.74	142.40	147.91	143.25
13	137.70	145.30	146.44	144.66	143.43	147.98	145.86
14	144.00	149.59	149.68	140.81	144.67	149.96	149.85
15	145.80	152.52	147.86	144.80	147.08	148.54	151.06
16	147.60	152.70	150.25	148.61	146.73	149.18	150.06
17	148.50	153.74	152.34	148.36	150.30	145.88	152.16
18	149.40	153.07	152.64	148.02	150.01	151.00	156.42

TABLE - IV

Weight for Age in different population

Age in year	Weight (kgs) measurements of different populations						
	80% of Harvard Std.	Munda	Oraon	Kurmi	Rajpoot	Kayastha	Brahmin
5	14.40	6.19	15.86	16.64	17.33	15.63	13.90
6	15.76	15.12	16.93	16.50	17.86	16.76	16.33
7	17.12	28.44	19.90	19.79	20.71	22.55	20.30
8	19.56	20.08	19.06	20.43	22.46	23.31	20.77
9	22.07	24.67	21.19	21.17	21.54	25.14	34.09
10	24.07	27.58	26.18	21.62	23.92	24.42	30.16
11	26.80	30.96	28.44	35.17	25.14	24.85	33.16
12	30.59	35.45	34.11	35.92	27.46	32.95	36.86
13	35.33	39.11	36.92	43.15	35.23	38.04	40.11
14	39.82	42.79	41.05	41.00	37.62	45.78	42.33
15	42.17	47.25	40.53	42.54	38.09	44.05	43.34
16	43.76	46.57	43.38	45.36	39.18	47.23	46.43
17	44.68	48.73	44.96	47.37	43.27	46.21	45.08
18	45.91	45.87	47.63	46.18	44.87	47.36	45.84

TABLE - V

WEIGHT FOR HEIGHT

Age in year	Weight for Height Value for Different Population Groups					
	Munda	Oraon	Kurmi	Rajpoot	Kayastha	Brahminc
5.	16.19/108.87	15.86/110.90	16.64/103.90	17.33/106.90	15.63/105.4	13.90/92.27
6.	15.12/109.5	16.93/106.85	16.50/107.7	17.86/114.5	16.76/114.9	16.63/99.52
7.	28.44/128.83	19.90/118.23	19.80/117.7	20.70/121.5	22.5/116.3	20.3/115.9
8.	20.1/113.9	19.06/115.7	20.4/120.6	22.5/126.2	23.3/124.2	20.8/115.7
9.	24.7/116.3	21.2/121.3	21.2/120.9	21.5/130.2	25.14/131.9	34.1/116.7
10.	27.6/135.9	26.2/131.6	21.6/122.4	24.0/130.3	24.4/127.5	30.2/137.2
11.	30.9/139.95	28.4/136.5	35.2/135.0	24.1/134.3	24.85/122 2	33.2/143.4
12.	35.4/144.3	34.1/142.4	35.9/138.7	27.5/142.4	33.0/147.9	36.9/143.3
13.	39.1/145.3	36.9/146.4	43.15/144.6	35.2/143.43	38.0/148.0	40.1/145.9
14.	42.8/149.6	41.0/149.70	41.0/140.8	37.6/144.7	45 8/149.9	42.33/149.9
15.	47.2/152.5	40.5/147.9	42.5/144.8	38.1/147.1	44.05/148.5	43 3/151.1
16.	46.6/152.7	43.4/150.2	45.4/148.6	39.2/146.7	47.23/149.2	46 4/150.48
17.	48.7/153.74	45.0/152.3	47.40/148.46	43.3/150.3	46.21/145.91	45.08/152.2
18.	45.9/153.1	47.6/152.6	46.2/148.1	44.87/150.01	147.4/151.0	45.0/156.4

TABLE - VI

STUNTING TRENDS AMONG DIFFERENT COMMUNITIES

Populations	Age in Years	Height in cm.	90% of Harvard std.	Deficit in cm.
Munda	9	116.27	117.45	1.18
Kurmi	14	140.81	114.00	3.19
	15	144.80	145.80	1.00
	18	148.02	149.40	1.38
Kayastha	11	122.17	129.75	7.58
	17	145.88	148.50	2.62
Brahmin	5	92.27	98.00	5.73
	6	99.52	102.15	2.63

TABLE - VII

WASTING TRENDS AMONG DIFFERENT COMMUNITIES

Populations	Age in Years	Wight in Kg.	80% of Harvard std.	Deficit in kg.
Munda	9	24.67	24.68	0.19
Oraon	8	19.06	19.56	0.50
	9	21.19	22.09	
	15	40.53	42.17	1.64
Kurmi	9	21.17	22.09	0.92
	10	21.62	24.07	2.45
	9	21.54	22.09	0.55
	10	23.62	24.07	0.15
	11	25.14	26.80	1.66
	12	27.46	30.59	3.13
	13	35.23	35.33	0.10
	14	37.62	39.82	2.20
	15	38.09	42.17	4.08
	16	39.18	43.76	4.58
	17	43.27	44.68	1.41
	18	44.87	45.91	1.04
Kayastha	11	24.85	26.80	1.55
Brahmin	5	13.90	14.40	0.50

TRIBAL ECONOMY AND ITS TRANSFORMATION IN INDIA

Ajit K. Danda

I

In the context of Progress of the economic formation of society, Karl Marx (1904) outlined four different stages of methods of production like the Asiatic, the ancient, the feudal, and the modern bourgoeis methods. He also formulated a five-stage sequence of social transformation beginning with primitive communism, which, passing through the intermediate stages of slavery, feudalism, and capitalism, is likely to culminate into what is called socialism / communism. They together reflect what we were, what we were and what can aspire to be. No matter what could be the nature of degree of consensus regarding the stages of methods of production, the five- stage sequence of social transformation provides quite a comprehensive outline. This, nevertheless, does not rule out the possibility for further elaboration as well as refinement of the sequence.

The stages as outlined are apparently exclusive though, being is sequence, suggest continuities. And done once this attribute is accepted as a part of paradigm, this opens up the scope for having a fresh look at the entire approach. In other words, how much primitive the 'primitive communism' is? Does it have anything to share with the following stages of the sequence? Is the over all scheme as such is that exclusive. The question raised here are merely illustrative and could have been extended. But that is somewhat beside the scope of this exercise. What we proposed to do here is to examine the livelihood pattern of what is called tribes in India and to review if out of that examination any pattern emerges. If it dos, how does it reflect in the context of Marxian as well as non-Marxian formulation? Before we get further, it will appropriate to say a few words regarding who the tribes are in the over-all Indian context.

II

The so-called standardized anthropological definitions of tribe, as given in the revised edition of *Notes and Queries On Anthropology (1960), Dictionary of Anthropology (1964)* by Charles Winick, or *Webster's Third New International Dictionary (1967)* list a series of mostly common attributes like a social group with a definite territory, dialect, unifying social organisation and cultural homogeneity having a common ancestor, chief, patron deity and the like. They together reflect a sort of prejudice as if the members of tribe are somewhat different, if not queer or exotic, who have an isolated existence and practically little communication across the boundary of their immediate tribal identity or territory. Such facts that the human populations everywhere, who for the purpose of specific objectives have been designated as tribes can also live side by side with non-tribes and constitute a part of a nation-state, do not seen to be within the side comprehension of definitions given in the cited reference. Instead, such ideas, that tribes represent a primordial state of life way behind in the scale of evolution gets strengthened, if not perpetuated through circulation of these definitions. They, nevertheless, are in a position to portray an ideal imagery, which is far form cultural and social realities of the Scheduled Tribes of India. As a result, often imaginary attributes are imposed on them in gross violation of dictates of facts. Accordingly, the tribes in India suffer due to a number of misconceptions:

1. They are presumed to be queer or exotic, apparently devoid of any sense of rationality having little sense about realities of life.
2. They are by and large administered on the basis of the image of them projected by non-tribes. Thus, they are hardly allowed to have any self-image.
3. Since there is general prejudice as if the behaviour of tribes by and large is not in consonance with practically, the non-tribes scarcely develop any respect for them or their culture.
4. Instead, there appears an extraordinary eagerness to transform or reshape their society, culture, and religion as if they have no right to live with what they possess in this respect.
5. Obviously, they have been put under server stress to recognize themselves imitating the way of life of so-called modern man.
6. Thus some what indirectly though, a sort of hierarchy is assigned between cultures of the tribes and non-tribes, relegating the tribal cultures to relatively inferior positions. Such is the height of pressure of this prejudice that there is hardly any attempt even to examine whether the text book notion of tribe inherited by India from the colonial rulers has any reflections of reality of life of the tribes in contemporary India. In fact, since Anthropology as an academic discipline grew in India under the patronage of the then British rulers, the definitions adopted for anthropological researches and analysis in this country reflected experiences and social realities of Europe, particularly of the United Kingdom and not of India. In other words, we have in general been trained to look at Indian social/cultural situation through Western eyes.

India's traditional perception of tribe was all together different since distinctions between tribes and non-tribes here was never as sharp as is was/is between the Caucasoid Europeans and the Negroid Africans. In the traditional system of cultural categorization, the sense of hierarchy implied in the European scheme of distinction between tribes and non-tribes was apparently non-existent. There is hardly any area of social, economic, cultural and political life in India where the so-called tribes do not have their representatives. It is, therefore, extremely important and urgent that the tribal situation in India is examined afresh and closely with all earnestness as well as sensitivity and is understood intimately to the extent possible.

It is considered imperative at this stage that the applicability of existing research tools and definitions for the study of tribes in particular and tribal culture in general is thoroughly scrutinized and appropriately indigenized so as to enable them to represent the tribes and tribal cultures in India empirically and scientifically. The so-called tribes of India represent a very broad spectrum, in terms of their population strength, geographical distribution, livelihood pattern, economic involvement, social and political participation, as well as cultural distinction. There is hardly any area in contemporary India where the tribes do not interact with their non-tribes counterparts. Under the circumstance, to what extent, following the Western model, the question of drawing a sharp line of divide between the tribes and non-tribes is any more valid or relevant is required to be closely examined. The Indian situation suggests continuity between trives as well as between non-tribes and tribes. Under the circumstance drawing any discontinuous boundary is likely to be a misnomer.

Categorization of population as tribes and non-tribes by implication suggests a sort of

homogeneity within the category. Accordingly, tribes of India in general are not only assumed as a homogeneous whole, even while designing induced programmes for their amelioration, they by and large are extended with identical treatment. This reflects a sort of insensitivity about the nature of heterogeneity as exists among the tribes of contemporary India. Even if we pay our attention only to the Scheduled Tribes, the extent of variety among them in different spheres appears enormous.

India has several characteristic physiographic divisions and the tribes distributed over here, because of their innate tendency of living in close harmony with nature, have evolved their traditional mechanism for exploitaion of natural resources. Their degree of exposures to the outside world and acquired educational proficiency have certain homogenizing effect on their livelihood pattern and culture though, on the basis of their economic involvement it would be possible to broadly classify the tribes of India into several distinct categories. It needs to be carefully noted in this connection that as tribal economy being basically non-differentiated in character, the categories could not be that exclusive. They rather reflect an overall livelihood pattern which emerged out of their respective interaction with the immediate environment.

III

Tribals in general are often considered to be historical prototypes of earlier forms who are presumed to have preserved *in situ* the primitive traits to a large extent. In order to have an exhaustive idea about the sequences of economic development particularly in the Indian situation, elsewhere (Danda, 1973) I have given a detailed classification of Indian tribes on the basis of empirical information on their means of subsistence. My purpose there was threefold. One, I proposed to present a detailed list of various economies practised by the tribals in India. In the interest of the classification, I ranked the available information into various levels of economic involvements and presented them in a tabular form. Thus, it provided detailed classified information about the diverse nature of tribal economy and paved the way toward a general economic classification establishing sequences of economic development. Two, from the analysis of empirical facts thus categorized, my attempt was to develop an exahaustive classification of tribal economies of India. Three, my next attempt was also to examine to what extent the typologies thus derived could be re-clustered together in a relevant order for delineating certain broader categories namely, the principle bases of livelihood.

Although multiple economic involvements of tribals were taken into account in that exercise, for an intimate understanding of the sequences of economic development, we paid our attention only to the primary economic invlovements of tribals. Analytically this was extraordinarily disadvantageous. With the increasing exposure and techno-cultural attainment, there is a distinct likelihood of transformation of tribal economy from the primitive to the modern institutional stages, either through the process of incorporation or substitution or a combination of both. In this respect secondary or tertiary means of livelihood, apart from having evidencs of diversification of economy, may also highlight the phases of transition. Thus, due to multiple constraints and by not incorporating the same into any scheme of analysis, I made the whole contribution apparently vulnerable to serious criticism. In spite of this delicate situation, the contribution was able to establish the scheme of sequences of economic development to an appreciable extent. The enclosed table gives

the summary statement of the economic classification of tribals in India and the sequences of their economic development.

Table : Frequency distribution of economic pursuits of tribes by levels of involvement (Danda: 1991)

A quick glance of the table reveals settled agriculture as the most represented economy among the tribals in India and a great majority of them practise it as the primary means of livelihood. This is closely followed by wage labour, wihch is practised by the maximum as the socondary means of subsistence. In contrast. terrace cultivation is the least practised economic pursuit and then comes trade and commerce in that order. It may be pointed out in this connection that trade and commerce score the lowest position among the primary means of livelihood of tribals. It is important to observe here that in spite of infringement of more powerful economic forces, food procuring practices still continue to incluence tribal economy to a large extent, though the great majority following them do so only as the secondary or tertiary means of livelihood. Influence of institutionalized economic pursuits on tribals is also considerable. In comparison, influence of animal husbandry seems moderate.

Whatever it may be, this becomes clear from the distribution of the table that the tribals in India are involved in a wide range of economic pursuits beginning from the most primitive form of collection of forest products to the latest form of post-civilizational and post-industrial specialized economy after passing through the intermediate stages of animal husbandry and food producing economy.

From the sequences suggested in the table, to what extent such economic activities are governed by the forces of non-institutionalized economy does not make automatically clear. Those who subscribe to food gathering as the principal basis of subsistence and consume the products thus gathered by themselves may generally be accepted as participants in the primitive economic pursuits. But without taking their secondary, tertiary, and other levels of economic involvements into account such generalization will not only be partial but to a large extent untenable. By assignment of appropriate score and analyzing facts accordingly, it would be possible to improve upon the quality of analysis. But this would not necessarily bring about any major qualitative change in the typologies of economic development suggested in that context.

IV

Influence of ecological condition on the choice of livelihood of a people emphasizes that economy in general, as the expression of their techno-cultural efficiency in the exploration of and adaptability to a given ecological setting at a particular point of time is one of the key factors to regulate the style of life of the people concerned. Thus, with the passage of time, any change in the ecological setting or techno-cultural attainment of the concerned people is expected to reflect upon the pattern of livelihood of them. As some changes in both the fronts either independent or due to feedback between the two are inevitable, this suggests the possibility for viewing economic transformation as a steady ongoing process. As the techno-cultural efficiency of and levels of adaptability to a given ecological setting are the key factors in determining the basis of livelihood of a people, any transformation in the economy of them is thus subjected either to a disturbance in the ecological setting or adjustment to their techno-cultural efficiency or a combination of both. Spontaneous change as such does not appear possible without concomitant transmutation in the techno-

cultural efficiency or a variation in the ecological setting. Once the exact nature of roles played by techno-cultural efficiency and adaptability to an ecological setting is realized, the validity of such categorization as spontaneous or induced change would largely lie with the conscious and purposive execution of planned development. Thus any deliberate change in the techno-cultural efficiency or ecological setting maintaining the balance of livelihood of a people is likely to result in induced transformation of their economy.

As already stated, most of the tribal communities of India are found engaged in more than a single economic pursuit. When this apparently implies diversified nature of tribal economy, this may also bear evidence of transformation, particularly when we examine such facts coupled with the emerging trends of specialization. A closer examination of information, however, reveals that transformation in primitive economy does not necessarily follow a unidirectional course of progress, that is from the employment of lower techno-cultural efficiency for exploitation of natural resources to the higher. There is definite information on record about cases, i.e. the Kodaku of Surguja District of Chattisgarh : where food producing shifting cultivators reverted back to the food gathering stage, particularly when they were prohibited to practise their traditional means of exploitation of natural resources. This, however, does not offset the scheme and on the whole evidences in favour of gradual transformation from a primitive means of subsistence to the modern ones are wide spread and the sequences outlined in the table are generally observed. Individual societies may skip one or two stages of development even at the level of principal bases of livelihood but this does not necessarily contradict the overall trends of change.

Harnessing of animal power in general should not be a prerequisite for transformation from food-gathering to the food-producing economy and contrary evidences in this respect are not rare. However, for the development of settled agriculture as well as widespread use of his knowledge there are positive evidences of mankind's initial dependence on animal power. Until recently, the great majority of settled agriculturists depended entirely on animal power and such dependence, particularly of the peasants of India including the tribal peasants, is still very high.

Evidences of food-gathering communities directly passing into the fold of wage labour are innumerable. Particularly in the areas where the resource situation appears scarce and the tribals represent a low level of techno-cultural efficiency, a direct transformation form the food-gathering stage to the wage labour seems common. Nevertheless, the existence of demand for wage labour as such presupposes the widespread influence of market mechanism, which grew primarily as the outcome of food surplus and technological development. Thus the single factor mostly responsible for major economic transformations is the expansion of modern market mechanism.

Although there are evidences of tribals' taking interest in participating in market exchange, in a great majority of the cases the market network as an outcome of direct or indirect human actions expands itself and brings new areas within its fold.

The tribals' initiative in participating in the market exchange in lieu of their observing traditional system of transactions may be described as processes of micro-transformation, provided that resulted in substitution between principal modes of livelihood. Such initiatives and consequent responses will naturally have only a limited impact. On the other hand transformations brought about by the widening market mechanism will have widespread impact and may be designated as macro-transformations. In contemporary tribal India,

particularly around the rapidly growing industrial urban complexes, the forces of macro-transformation are predominant. In comparison cases of micro-transformation are restricted largely to remote tribal areas.

The influence of market mechanism is evident in very aspect of tribal economy in India like economic resources, economic activities, or economic relationships. Individual ownership of land, inheritance of community property by individuals, differentiation of profession, specialization of roles and widening up of network of economic relationships are only a few examples to illustrate as manifestations of such influence. Tribals' lands have come to the market, one can buy their labour in terms of money, and the obligatory social relationships are steadily being substituted by contractual market-oriented relationships. As a result, the virtue of reciprocity is often questioned these days and their traditional mechanism of redistribution has largely gone into disuse. Accordingly, the tribal economy is fast losing its distinctiveness and identity, giving way to the institutional economy. Under such circumstances, where exactly characteristics of primitive economy ends and modern institutionalized economy begins is difficult to ascertain. But if we closely examine the sequences of development, evidences of transformation of the basis of increasing degree of specialization becomes conspicuous. This, however, suggests a scheme of development without necessarily indicating the point or points of major breakthrough.

V

The given analysis demonstrates with evidence that the dichotomy between the tribal and non-tribal economy is not as exclusive as they are by and large assumed to be. In fact, they very perecpt, "tribal economy" seems to be somewhat a misnomic activities thereby suggesting countinuity from one polar end to the other. Nevertheless, if one is interested in identifying a market, perhaps non-differentiated nature of economic involvements of the tribes would suggest a possible break-through. In other words, non-differentiated and highly-differentiated economic involvements would make of beter substitute as a dichotomy in this respect.

The details outlined here do neither corroborate nor contradict the grand scheme of Karl Marx. It needs to be appreciated that in the interest of developing a grand theory, multiple specificities may have to be ignored. Thus, all details as indicated in this analysis are not expected to get adequately reflected in the grand theory. In this context what perhaps connot be ignored is the non-exclusive character of primitive, tribal or non-differentiated economy.

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IS OBESITY A GENETIC DISORDER ?

Arnab Ghosh

Abstract : Should obesity be considered as a genetic disorder ? It clearly is in some relatively rare cases. When obesity is caused by an individual gene resulting in the lack of a competent protein affecting a pathway impacting on the regulation of energy balance, then obesity is a disorder with a genetic origin. However, it is difficult to conclude firmly on the prevalence of cases of genetic obesity, as there remain undoubtedly a large number of genes (candidate genes) to be evaluated in this regard and multiplex genetic testing needs to be further evaluated for obesity.

OBESOGENIC ENVIRONMENT

Obesity is a chronic disorder that causes considerable personal suffering in affected individuals and has enormous economic consequences. It increases dramatically the risk of developing type 2 diabetes mellitus (T2DM), coronary heart disease (CHD), hypertension (HT), sleep apnoea, asthma, certain forms of cancer and osteo-arthrities of large and small joints.

Should obesity be considered as a genetic disorder ? It clearly is in some relatively rare cases. When obesity is caused by an individual gene resulting in the lack of a competent protein affecting a pathway impacting on the regulation of energy balance, then obesity is a disorder with a genetic origin. In such cases, the environment has only a permissive role in the severity of the phenotypes. Interestingly, in some cases, the obesity associated with a single-gene mutation could be reversed by administration of the human recombinant protein. It is difficult to conclude firmly on the prevalence of cases of genetic obesity, as there remain undoubtedly a large number of genes to be evaluated in this regard. Based on the body of data accumulated to date, it would seem that cases of genetic obesity could represent at least 5% of the obesity cases and large percentage of the severely obese.

For the more common forms of obesity, it has been proposed to dividing them into those with a 'strong genetic predisposition' and those with a 'slight genetic susceptibility.' In contrast with the first category (genetic obesity), those with a strong genetic predisposition are characterized by a clearly defective biology that can be reduced to a gene and a mutation or some other abnormalities. The strong predisposition results from susceptibility alleles at a number of loci. In an environment that does not favour obesity, these individuals would likely be overweight. They become obese and potentially severely obese in an obesogenic environment.

A third group is arbitrarily defined as having inherited a slight predisposition to obesity. In a restrictive environment, they may be normal weight or slightly overweight. An obesogenic environment will result in a large fraction of them becoming obese.

Finally, a fourth category includes those who are genetically resistant to obesity. They remain normal weight or almost normal weight in a wide range of obesogenic conditions. These four types are predicted with respect to differences in obesogenic conditions.

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PRE-AGRICULTURAL HUNTER-GATHERER GENES

The obesity epidemic we are facing today occurred only over the past three decades and can clearly not be explained by changes in our genome. The rapid weight gain in the population is more likely due to a changing environment that encourages consumptions and discourages expenditure of energy, behaviours that are poorly compatible with our 'pre-agricultural hunter-gatherer genes.' Therefore, most obesity cases come about not as a result of a markedly defective biology but are rather caused by maladaptive behaviours nurtured by an obesogenic environment. However, we have learned over the last two decades or so that whilst behaviour can be modified in the short term, most people revert back to familiar patterns after a few months. There are considerable environmental and societal factors that make it difficult for most people to adopt a preventive lifestyle that would allow them to achieve and maintain a normal body weight. Without major environmental and societal changes, it is almost certain that the obesity epidemic will continue to spread around the world.

GENES AND RISK OF BECOMING OBESE

Until now, genetic screening for obesity has concentrated on the identification of mutation in specific genes in persons who are severely obese with the greatest success rates being recorded in cases with an early age of onset. An important question is whether genetic tests can be developed for population screening in order to predict the level of risk for the common polygenic form of obesity.

It has been claimed that genetics will revolutionize clinical practice in that it will lead to the genetic prediction of an individual's risk for common diseases and responsiveness to drugs. According to this view, genomic medicine will revolutionize the diagnosis and treatment of many common illnesses.

This view has, however, been challenged and the practical usefulness of genetic testing for complex multifactorial diseases has been questioned. This skepticism stems from limitations associated with the incomplete penetrance, variable expressivity, within and between populations and the low magnitude of risks typically associated with a defective genotype in the population. Despite the fact that many 'obesity genes' have been mapped, high penetrant, high-risk genotypes have not been found yet for the most common forms of obesity. Therefore, the contribution of an 'obesity gene' to the development of common obesity will be difficult to quantity and is likely to be low. The experience from 'candidate gene' approach as genetic test, strongly suggested that genetic screening might not be as straightforward as originally anticipated. Moreover, gene-gene and gene-environment interactions in the etiology of obesity are still poorly understood and are not taken into account at the moment.

It has been argued that the positive predictive value (i.e. the probablity that the disease will develop in a person with a positive test result) of a genctic test for a complex disease will likely to be low. However, most studies have examined the effect of only one gene at a time to estimate a genetic risk. A more productive approach may be to rely on the use of multiple genes. Indeed, the prediction for common diseases, such as obesity may be improved by considering multiple genes simultaneously. However, a major prerequisite for this approach is knowledge about the risk associated with each genotype under various environmental exposures. Multiplex genetic testing needs to be further evaluated for obesity.

However, we do not have sufficient data to justify widespread screening for obesity at present.

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DESCENDING DIVINE *SHAKTI : CHANGING TRADITION OF DURGAPUJA IN WEST BENGAL*

Gopalkrishna Chakrabarti

INTRODUCTION : THE DESCENT OF GOODESS DURGA

Markandyeypuran narrates the manifestation of the goddess *Durga* on the earth. According to the story, the gods being defeated by the *asur* invoked Shiva – the god of destruction. Shiva along with other gods began to meditate seeking the appearance of the supreme power to help them. Soon the *devi* appeared from the combined power of the gods and assured them of the accomplishment of the task. The gods offered prayer and lent their armoury to the divine *shakti* to fight against the demon. Eventually, after the battle, the goddess *Durga* subdued *mahishasur* (demon in the form of buffalo) but could not kill her since the demon was protected by the *ashirvad* (boon) of the Lord Brahma that won him the merit of immortality. To commemorate the event, the *durgapuja* continues to be practised in the human society.

Another story on the issue of *durgapuja* has been depicted in the epic of *Ramayan.* Before the commencement of battle against the demon King Ravan, Ayodhya king Ram worshipped the goddess *Durga* in an untimely evocation (*akalbodhan*) during the pre-autumn for Ravan had eloped his queen Sita. Being empowered by the divine *shakti,* Ram killed Ravan and rescued Sita and brought her back to his kingdom. To commemorate this mythical event, the Bengalee of India perform the annual *Durgapuja* ceremony in the pre-autumn.

In fact, *Durgapuja* is performed twice a year in Bengal. The *puja* performed during the spring in the month of *falgun* (February-March) is known as *Vasantipuja* while the *Sharadia Durgapuja* is performed in the month of October-November. Later one is performed in West Bengal as chief festival.

Without refering to the texts of *Puran,* the common Bengalee imagines *Durga* as a daughter of the family who has been married to an idle but destitute man of the north. Shiva – The son in law is a good fellow but takes little care about the family. So, *Durga* has to bear the brunt of the life. Once in a year, she visits the paternal home down the south in Bengal for four days along with her children. This visit brings the joy in the family.

ANTHROPOLOGY OF TRADITION AND FESTIVAL

Culture and tradition are related terms. While culture, in anthropology, means 'whole way of life', tradition is the continuation of culture through generations. However, the term tradition lacks formal definition. Theoretically it is loose, ambiguous, and vague. In social sciences particularly in anthropological parlance, tradition refers to the cultural continuity that is handed down the cultural heritage from one generation to the others. The Indians, for that matter people of the Old World, are thought traditional for the reason that they stubbornly refuse to accept anything or idea foreign to them. Behind the idea, there is a subtle comparison between the Old and New (West) Worlds while the social sphere of the latter changes fast keeping pace with the modernişation or technological change. Tradition also means cultural heritage. It is assumed that the people want to preserve and transmit the tradition unchanged.

The diverse elements of a tradition, called 'value', are held together by a common underlying thought called World-view (Cosmology). Each and every community or culture has its own worldview. It equips the people of a community to justify, explain and interpret their own social (behaviour) action. The principal characteristic of Indian civilization is that the people refer the past to justify the action of the present. Therefore, tradition is not just the cultural continuum of the Hindu people; it legitimises the present behaviour with reference to the past. Though tradition is a reservoir of a community's knowledge (thoughts), it is not just a stagnant pool of ideas or behaviour. It is continuously changing. While the people forget old ideas, they accommodate and synthesize newer ones with the older ideas. This forgotten-ness of the tradition is history. Tradition or history is the story of (social-cultural) change. Tradition(s) is (are) created, continued, and destroyed by the people to cope with the ever-changing external condition(s).

The locus of the tradition rests on the social existence of man. On the basis of rural and urban residence, traditions are of two types. Little tradition is conected with the unlettered, unreflective rural mass. They are the creators of the local tradition and amusingly, it is least understood. Their creation is preserved through the oral issues like folk song, myth, folklore, story telling etc. For example, characterising Durga as an unfortunate woman married to a destitute and who is visiting parent's home every year is the creation of so called little tradition. The creators of the little tradition are mostly ignored though they are also sensitive to the larger social issues. In India, it is related with the system of peasantry. Great tradition is connected with the urban, literate, and reflective few and is preserved through the written texts e.g. *Shastra.* The bearers of the great tradition are also the creators, interpreters, and communicators of their tradition. *Durga* as the divine *Shakti,* manifested from the combined power of the gods to subdue the evil, is the creation of the great tradition. Like little tradition, great tradition in India is also associated with the system of peasantry. As the economy of the society is changing the great tradition and its elements are also changing.

A derivation of the Latin *festus* (of holiday) or Indo-European *dhes or dhesto,* the term festival means the major social event(s) created by a community to express its culture and its life's form symbolically. This symbolic form constitutes two modes, **play and ritual.** While ritual performs the seriousness of life, play shows the social order that offers license to accommodate everyone participating in the festival. In this sense, ritual is rigid and does not offer license to just any one. The values and solidarity of the community or society is enhanced through the performance of a festival, religious or otherwise. A religious festival is performed to commemorate or celebrate the anniversary of its founder, holy figures, and gods. The celebrating congregation in the festival illustrates the social factor(s) through the religious performances (Turner, 1996, pp. 484-85).

A close examination of *durgapuja* unfolds three dimensions those are associated with the performance. The first one is esoteric or metaphysical that interprets the reason for worshipping the goddess. This interpretation or *darshan* (to see / philosophy) or value is further connected with the second dimension of rituals. These two dimensions together form the ritual aspect of the performance. Festivities constitute the third dimension and can be termed to borrow Turner's phrase, as play. The scope of our discussion is limited to the third dimension only since the total study or *Durgapuja* would require an entire volume. And again, the third dimension offers varied elements those reflect upon current social conditions with its history at the backdrop.

DURGAPUJA IN HISTORY

Durgapuja is as old as our civilization. The history of the origin of *Durgapuja* reflects upon the social history of India. With the transformation of foraging society, the women discovered the art of domesticating the plants particularly the edible varieties. The women of a community give birth to the children to supplement the populace lost due to death. The loss is recovered through the birth of the children and therefore, the group / community / society continues keeping pace with the time. A symbolic connection among earth and women has been established for both of them are capable of giving birth. While the former sustained the life by giving birth to the crops, the latter sustained the group by reproducing children. The problem of death is resolved symbolically by performing the life giving events. The cultivation of crops with digging stick and hoe (sexual intercourse in symbolic thinking) is associated with the matriarchal social system. Since the women discovered the art of growing crops, the women exercised the authority in the matriarchal society. This is evident from a seal found in the Indus valley. This seal depicts a women figure with folded legs upward and a small plant is coming up from her genitalia. The woman is the symbolic earth. In ancient Sanskrit texts, Durga has been referred to as *Shakambhari* and *Aparna*. The name *shakambhari* i.e. who gives birth to the vegetables or plants carries the image of the women figurine found in the Indus valley. The name *aparna* means 'without *parna*' (leaf) i.e. leafless or without having any leaf girdle. The deity is thought to be responsible for the fertility of soil and growth of plants. To ensure the production of food, the concept of mother goddess as part of fertility cults was developed during Indus Valley Civilization of which the above-described seal is only a remnant. (Chattopadhyaya, 1981, pp. 292-96).

In course of history, the goddess of good harvest of Indus valley transformed into the *shastriya devi*. The idols excavated from archaeological ruins in different parts of India and the bas-relief found on the walls in enormous living temples particularly of South India are named as *mahishasurmardini* (buffalo-demon slayer) show that the idea of *devi durga* dates back to eighth century. The idols and images so far found are quite different from the ones familiar in Eastern India. Here, the *devi* is killing or subduing the *asur* (demon) in the manifested form of *mahish* (buffalo). This image is different from what is found in West Bengal today. Here, the devi is subduing the *mahishasur* riding on the lion while being accompanied by her children namely, *lakshmi, saraswati, kartik* and *ganesh*. Rarely in Assam and Orissa this Bengal image of *Durga* accompanied by children is found and even if it had been due to the migrant Bangalee community.

Another strong evidence to support the origin and association of *Durgapuja* with the agricultural economy is that on the day of *bodhan*, a *navapatrika* is constructed and worshiped on the auspicious moment. Next, the *navapatrika* is kept at the left side of the idol of *Ganesh* and is referred as his consort. In fact, this *navapatrika* is made of nine plants and agricultural products. They are, *rambha* (banana, *Musa paradisaca), Kachu* (aurum, *Auram colocasta), haridra* (turmeric, *Circumlonga sp.), Jayanti (Hardeum hexastibum), bilva (Aegle marmelos), darimva (Punia granatum), ashoka (Janesia asoka), mana (Manaka sp.)* and *dhanya* (paddy, *Oryza sativa).* (Bandyapadhyay, 1987, pp. 12).

In Bengal, the idol of *Durga* is accompanied by four other idols known among the Bengalees as *Durga's* children. These four idols represent the four *varnas* of the Sanskritic texts. *Ganesh* is the symbol of labour and success and represents the *sudra varna. Lakshmi*

is the symbol of wealth and represents the *vaishya varna. Kartik* or *kartikeya* who is also the general of the army of the gods, is the symbol of strength and represents the *Kshatriya varna. Saraswati* is the goddess of learning and represents the *brahman varna.* Association of *varna* system with images or idols of the deities definitely points to the social history of agricultural India condensed into symbolic forms.

DURGA PUJA IN HISTORY OF EASTERN INDIA

In 1580 A.D., *Durgapuja* in its present form as annual event, was initiated by Raja Kansanarayan of Taherpur (now in Bangladesh) – one of the legendary twelve big landlords. To ward off the sin he accumulated by helping the Mughal Sultan to curb the rebellion in Bengal, he started to worship the *devi Durga* on the advice of his chief priest as a form of penance. It can well be imagined that other chiefdoms followed the path of Raja Kansanarayan. The organiser of *puja* had gradually attained a symbol of legitimate authority of the earth blessed by the divine power. The known local history ascertains that Raja Krishna Chandra Roy (1710–1782 A.D.) of Krishnanagar (Nadia district) who was an ardent *shakta* devotee, popularised the *puja.*

In Kolkata, the Sabarna Chowdhuri family of Barisha commenced their family *puja* in 1610 A.D. At that time, Kolkata was a small sleeping village prior to the arrival of British merchants lead by famous Job Charnak. From the mid-eighteenth century, the emergent rich families *(babus)* of the then Kolkata started their family *puja,* which was open to the public. In 1757 A.D. the royal family of Shobhabazar (Kolkata) has initiated the puja. Again about 278 years back the Mukherjee family founded by Jagat Ram Mukherjee has commenced its family worship.

Durgapuja as family ritual and celebration is not confined to the examples cited above. In fact, many rich families from the districts of West Bengal still continue the tradition of invoking the goddess annually. For example, the worship of royal Deb family of Bishnupur located in the district of Bankura is said to have started the worship in 997 A.D. It is not known when the royal family of Cooch Bihar has started their Durgapuja. Till date, the descendants are performing the *puja.* More than 250 years ago the Sarkar family of Surul village in Bolpur has been commenced. Till today thousands of people from neighbouring villages attend the *puja.*

Apart from the metaphysical ideas, ritual is also a field to understand social relations existing within a group or community. The penance of Raja Kansanarayan by initiating *Durgapuja* has established the vertical unity among the different caste groups of the peasantry in Eastern India (Ghosh, 2000, p.295). This attempt might have been a conscious effort by the king to build up a system of stratification. The ranks of the occupationally specialised caste groups have been legitimised while they have rendered services and articles for the *puja.* The historical evidences suggest that the big landlords of Eastern India commenced *Durgapuja* as early as sixteenth century at a critical point of time when the Islamic rulers brought not only Bengal under their rule but also most part of the entire country. It was imperative for the local chiefs and landlords to reclaim economic and social power. *Durgapuja* mentioned in the Sanskrit scripts enabled them to reconstruct the economic organisation of the society that would be legitimised by the ritual performance. Thus the local chiefs presented themselves as the authority of economic and social spheres of regional life.

BAROARI OR SARVOJANIN DURGAPUJA IN KOLKATA

During the British rule, the new society emerged in port town Kolkata wiped out the caste implications associated with *puja* to make it public. The Bengali term *baroari* has been derived by conjoining two words *baro* (twelve) and *yaar* (friend) with a suffix *i* (related). In Sanskrit, the meaning of *Baro* is 'collective' which is almost similar to the Bengali meaning. The first *baroari* (public) worship organised by twelve friends *(baroyaar)* at Guptipara – a village near Shantipur (district Nadia) – in 1790 A.D. Another public worship was organised at Chakdah (district Nadia) in the same year also. The *puja* of Guptipara raised subscription for the ceremony and arranged *sang* (mimicry), puppetry, *jatra* (folk theatre) *half akhrai* (a form of bawdy singing as entertainment for the public). The transformation of the family and rural *puja* into urban and public has failed to mitigate the disputes of caste hierarchy. Though public, these *baroyaari pujas* have become the venue of caste conflict. The low caste groups were forbidden to enter into the sanctum sanctorum of *puja.* Disputes over the entry of low caste groups in the *puja* venue are also evident from 1821 A.D. at Joynagar adjacent to Kolkata to 1860 A.D. in a village of Bardhaman district (Ghosh, 2000, pp. 295-6).

The *babus* (gentlemen / wealthy) of Kolkata organised folk performances and bawdy songs for the *mass* along with their family worship. They have also organised songs, dances by the professionals, and drinks for the invitees only including the rich and Englishmen with whom they had business transaction (Ghosh 2000, pp. 295-6). This evidence signifies that the social distance between the high and low castes has been replaced by wealthy and commoner. The ceremony of *Durgapuja* has become a symbol of a new society with the growing city of Calcutta.

Being an iconic festival of Kolkata and elsewhere in West Bengal, new specialised groups have emerged to cover the different dimension of the celebration replacing the aged caste system. The vertical alignment has been changed and for the matter, the occupational specialisation of the past has lost its significance. Around the festival the newly developed market, of both labour and produce, are legitimising itself by drawing a metaphorical relation with the *puja.* Traditional icons are changing its meaning to pave the way of a new consumer society. The closed market system of the caste-based economy is now open to accommodate 'others' through the observation of the traditional rituals.

CHANGING TRENDS : DIMENSIONS

Committee This phenomenon emerged with the inauguration of public festival. In earlier days, while the organisation of *puja* remained in the hands of a particular family even if it is meant for the public, the *baroari puja* of kolkata assumed a little bit of democratic character. Having to caste and economic character as such, the committee is constituted of the persons from various walks of life. However, the character of this committee differs from one locality to another. The constitution of the committee reflects how the public worship is used as a platform to achieve a particular or a set of goals. Some forty years back in the middle class locality, a committee used to be headed by a person of local renown by way of his educational background and social service. A secretary of highly active personality and a treasurer of equal calibre remained at the helm of the affair followed by a batch of scrupulous enthusiastic youngsters. Having a room in the *puja* committee is a way to be well known in the area. For, in every locality the competition over the group

interests leads to the formation of factions and the *puja* committees serve as platforms to mobilise local powers in favour of a particular faction (Banerjee, 1973).

What is important here is the patronisation. The generous patronisation once given by the affluent gentleman of the locality gradually shifted to the sponsorship of renowned business enterprises. Thus the *puja* committees receive enough money to venture into new styles of erecting pandals, lighting and images. That too has become a hush-hush in the local areas among the rivals so that one can not imagine what the others are doing. Once, the solvent *puja* committees used to reward the budding artistic skills and donate cloths and blankets to the poor of the locality. Now it is mostly spent in extravagant annual event.

Image The traditional idol of *Durga* used to be worshiped both in rural and urban families, is not the lone figure of *mahishashurmardini* as it is found in the eight century Pallava temples and architecture. In this type, her entire family comprising two daughters and two sons namely, *Lakshmi, Saraswati, Kartik,* and *Ganesh* accompanies *Durga* is found within a single background. Though the husband of *Durga – Shiva* is not present there in the form of an idol but customarily his image either in painting or in printed form is hung at the background. In the public festival or in the private family worship opened to the public, the same group of idols used to be worshiped. Later, the idols of the deities are separated and sometimes assume large figures. Formerly the image of *Durga* was of divine appearence looking forward at the devotees as it was prescribed in the Shastra. Soon the ritual assumed the role of celebration or public festivities, the image of the deity began to deviate from the prescription of the *shastra* and became a subject of free artistic imagination. In the last forty years or so, it reaches to an extravagant proportion. The fierce looking *devi* riding on lion's back killing the armed *mahishasur* with her trident received appreciation of the audience. In the eighties, the clubs started to experiment with the idol of the *devi* to attract more crowd. Keeping the *Shastriya* prescription at bay, construction of the idol with the food grains and inauspicious material continued for some years despite the protest from the orthodox. That too soon vanished with the unsolicited demand from the public for the new. For a consolation to those who have been pained and shocked with the changes, the old style continue with traditional image decorated with pith made ornaments. In between the restrain of the tradition and shock of the modern, a good number of image makers experiment with image styles those are found in the recluse of serene temples. Over a decade or so, students of the Government Art College and other similar institutions have started to construct image to bring a creative change in the art of image making. The elements of folk art or the tradition of image making in the countryside of West Bengal as well as Assam and Orissa have been combined with the styles developed in the formal art institutions to create a fresh and new portraiture of imagining the divine. Each aspect of the image making is gradually creating a new group of specialists replacing the old ones. With the innovations in technology, materials like fibreglass is being used ignoring the *shastriya* prescription to cater the Bengalee buyers settled abroad.

Pandal and Decoration At earlier times, it was customary to the economically affluent families of rural areas to erect a special brick-built structure, inside or outside the house, to be used as domestic shrine. This structure is also used as sanctum sanctorum of the annual *durgapuja.* In the absence of such structure in the public worship a temporary structure is erected with bamboo and sheets of cloth. Similar to the domestic shrine, it is clearly divided into two main sections. The raised platform, where the idols are placed and

worshiped can be taken as the most sacred part of the structure. The priest or the persons who are given the task of assisting the priest can only negotiate this section. The other section of the structure is negotiable by everybody for having a *darshan* (view) of the deities. Later, the building of this temporary construction reached a stage of art done by a group of skilled person. The skill reached such a level that they can give the structure enough flexibility to take any form. Till today many big public *puja* erect the pandals that look like big famous temples of India. Likewise in case of making the idols, a revolution occurs over the decades. Using different other materials like paper, bamboo strips, pith, thermocol, synthetic papers and every other materials one can think of. Recently, the addition of such materials like small earthen pots, earthen half cylinder and tiles once used to cover the roofs of the rural houses add to the name and fame of *baroari pujas* of Kolkata. Amidst the sensations that the *baroari pujas* want to inflict into the public memory, a new trend has been accepted by the urbanites. The experiment with the pandals includes the apparent structure of the shrines of other religious groups, for example, the church, mosque, gurudwara etc. Also, the decorators along with the organisers put up such structures those turn into a matter of public discussions. These works may be regarded as wonderful works of creation that lasted in the public memory for few years and later forgotten to give way to the other new creations. This creations and forgetting may be considered as the character of public events and life where history i.e. tradition takes the backseat in order to create the next tradition.

Ambiance / audience Traditionally in India, pilgrimage to the sacred centres is considered as an act of merit. Semantically, it means the inward journey to the supreme, to one's own Self. Visiting the place of worship for a *darshan* (to see) of the deity (or idol of the goddess) during the *puja* is similar to make a pilgrimage. The metaphysical meaning of *darshan* (to see, philosophy) is also an inward journey to meet (see) the God (Self). Thousands of visitors, not only from nearby rural areas but also from the adjoining districts swarm the city to enjoy the extravagant lightworks, pandals and images.

Literature (Autumn issues) Perhaps this is the most creative aspect of the celebration. Almost all the magazines, starting from reputed, popular, and well established to the little known rural little magazines, published in vernacular take out *sharadiya* (autumn) issue. Most of the times, these issues become the annual issues also. In case of the well established journals and magazines, the publishing houses invite the writers to join the small ceremony of *poila Vaishakh* (1st. day of Bengali calendar, 14th / 15th April) or *Rath-Yatra* (chariot ceremony) organised by them. Their they invite the eminent writers and sometimes the rising ones to start their writing for the publication. The writers from then have to toil with their breath and matching the speed of pen and thinking in order to meet the deadline. For, six months labour earns them livelihood for the whole year. For the reputed, it's the time to experiment with their style, narration, and ideas while the relatively new or rising writers are anxious to keep their foot firm on the circle of the literature. The regional or local magazines that try to keep floating cater the creative need of the local educated.

Music Gone are those romantic days when the urbanites were waiting eagerly to listen to the new modern Bengali songs sung by the golden voices. In between the 1950s and 1970s *sharadiya gaan* (autumn songs) was a delightful experience. The most acclaimed lyricists and composers published their creative best during the *puja*. Its not that the music is not published on this occasion now but the collectors' pride has taken a new technological

direction. With the advancement of electronic musical system, the magnetic cassettes and audio and video compact discs have replaced plastic discs of yesteryears. Similarly, lyrics of the annual vocals have changed their content. Continuous demand for the new has brought back the music of bygone days. Sometimes, the olden music has been visually 'remade' to fit with the ambience of constantly changing urban way of life. Listening to the music of the lost days played in the *puja* pandals not only brings back the nostalgia in the regular vocabulary of 'market', 'current', and 'consumption' but also recreates the history of Bengali culture. The creators on this occasion get the platform to wipe out the boundary of traditional and modern.

Fashion, Food, and Travel Irrespective of ritual density, festive time offers the adherents a scope to stretch themselves in every manner. While the producers of consumer items are constantly making efforts to capture the largest portion of the market of the festivity, the consumers are in constant search of the new be it the dress or food. In order to fulfil ever changing urban demand of new, the producers market the design of virtually of everything that have dreamt by the people particularly middle class through the print and electronically controlled media. Thus, *puja* fashion has become a household name; hotels advertise their best efforts to draw the travellers of all possible budgets. Keeping the volatile market always in the favour, the producers have to engage not only the best skilled persons but also innovate new ones.

OBSERVATION : THE DECENDING *SHAKTI*

It took centuries for the transformation of *Durgapuja* from the private worship to family worship and later, public festival. The initiation of *Durgapuja* at the family level was aimed at incorporating different caste groups into the structure of rural society. During this annual worship interdependent caste groups used to exchange remuneration. The changing land tenure system resulted in the development of urban areas where *Durgapuja* was initiated to dissolve the stratification based on caste hierarchy. But the new social order had to pass through disputes over the entry of low caste people in the *puja* venue. Prior to the commencement of twenty-first century the annual festival of *Durgapuja* has already turned into an icon of Bengali culture where different occupational groups urban or rural have been incorporated. People from different non-Hindu communities have been inducted as committee members and functionaries of important public *puja*. The importance of the ritual in the public worship is on the wane but the festivity around *Durgapuja* has rendered not only space for close interaction of different communities but also a platform of syncretising ideas.

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PALAEOLITHIC TOOLS FROM INDO-BHUTAN BORDER

AT TOTOPARA, JALPAIGURI DISTRICT, NORTH BENGAL : NEW DISCOVERY FROM NORTH EAST PART OF THE SUB-CONTINENT.

Dr. Manibrata Bhattacharya

Abstract : During anthropological field work in the village of totopara, Jalpaiguri district, West Bengal a discovery of palaeolithic relics at the Indo-bhutan border was made at different levels of the hilly terrain. In fact, such an evidence belongs to the lower palaeolithic stagein the sequence of prehistoric culture The technique of manufacturing of the chopper is quite distinct found in the subcontinent and even the style of manufacturing and morphometric characteristics of the hand axe are also different. This artefact assemblage may have broad similarity with the lower palaeolithic assemblages of the south west upland Bengal. But a closer scrutiny reveals morphometric and technological differences between the North and South West Bengal assemblages. The eco-zones of the two areas are also quite different-one is in the Duars region of the foothills of lesser Himalayas of the Bhutan-India border and other one is at the upland Bengal of the pane plain region of the Chhotanagpur plateau extension.

Cultural relics of the early man is hitherto unknown in North Bengal {India} has been discovered from the western Duars of Bengal which is really an important and historical event. Such a discovery is going to alter the map of palaeolithc findings of this subcontinent by adding a new region which is hitherto known as terra incognita. However, recent ethonogra- phic fieldwork among the Mongoloid tribe of North East India, Totos of Totopara, in the western Durs of North Bengal evidence of the palaeolithic culture has been encountered at the foot hills of the Hipsa pahar, which is the lower portion of the Bhutan Pahar of the outer eastern Himalayas.

The Totopara is inhabited by the Totos, the smallest and one of the primitive tribes of West Bengal having a total population of 1153 as per Census of 2001. The discovery was made while and anthropological fieldwork was carried out in the month of June, 2002. In the village of Totopara, the palaeolithic cultural relics was encountered suddenly on the way of up and down at different levels of the hilly terrain. In fact, such an evidence really belongs to the lower palaeolithic cultural tradition in the sequence of prehistoric culture.

The geographical location of the site lies between 26 50 and 89 20 E at the slope of the lower Bhutan Hills, belongs to Totopara mouza, Madarihat police station of Jalpaiguri district. The village is about 23 km north of the Madarihat police station. The Torsha is the main river flowing to the east and an extension of the jaldapara sanctuary surrounded some portion of the village at the south. The western side is guarded by a hillock locally known as Pudua pahar. At the north, Bhutan-India international border line starts. There are dolomite quaries at the border and trucks full of dolomite are supplied daily through the border of the village. Totopara is a patch of undulating terrain and just at the south of border line between Bhutan and West Bengal where the elevation of the hilly and undulating terrain varies between 75m and 380m. However, the site is situated at about 110m. from mean sea level. Some sort of flat hill tops and the slopes dissected by the

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hilly sreamlets are the most important geomorphlgical features. Besides., pieces of different sizes of boulders, cobbles and pebbles are strewn here and there.

The Paleolithic assemblage is found in cluster around a perennial spring on the hill slope. The diameter of the cluster is about 20m. The tools are found on the surface and the assemblage sometime covered with thicket and undergorowths. The assemblage comprises chopper on splited cobble and on thick truncated elongated flake, hand axe and scraper. The raw materials used are gray quartzite and quartzitic phyllite which are locally available.

CHOPPER ON SPLITED COBBLE:

A heavy duty tool of large size {15.1cm x 12.1cm x 7.2cm} with cobbely cortex. retained partially at the dorsal surface; thick butt with broad and triangular surface for facilitating grip; fashioned in such a manner with broad as well as smaller flake scars so that a smooth surface resulted for efficient manipulation; right side and the lateral edge have broader and numerous secondary flakings from both dorsal and ventral surface. The ventral surface is flat with small and shallow flaked lateral edges. This surface is mainly smooth splited cobble surface. As result the cross section is plano-convex. The anterior portion is tapering and thinner while posterior is very thick, stout and can be used.

CHOPPER ON FLAKE:

The length, breadth and thickness of the tools are 14.4cm and 3.7cm respectively. The dorsal surface is entirely worked having different sizes of flake scars but ventral portion is plane and the lower portion is truncated resulting its unique appearance. The left lateral side is entirely blunted and smooth which facilitate well grip and handling of the tool. At the right portion flanked slaked surface with long but shallow flakings are very prominent. The right lateral edges are prominently convex with numerous tiny flakings and retouches. The sinous cutting edge is stout but thin. The cross-section of the tool is somewhat rhomboidal due to conchoidal large flakes at the ventral surface thick but very steep margin of the left side. There is a tang like portion at the posterior but at the anterior portion is tapering and pointed. The rock type is grey quartzite.

HAND AXE:

The raw material used to make the tool is medium grained dark quartzite and the hand axe is bilaterally symmetrical The length, breadth and thickness of the tool are 14.6cm, 8.9cm and 3.1cm respectively.

The tool is of a lanceolate type and thoroughly flaked both on dorsal and ventral surfaces. There are a few moderately broad and deep flake scars but numerous small and secondary; step flakings are also found and retouches are well market at the cutting edges shows skillful controlled flaking of higher order. The cross-sect is biconvex.

SCRAPER :

One scraper is thick and square like {10.9cm x 9.3cm 4cm} and the lower portion is more thick than the upper portion. The ventral portion is flat with lesser amount of flakings. The dorsal surface is also flat but tiny flakings are there. The right portion shows steep and flank flaked surface. The anterior portion was flaked in such a manner that some portion becomes steep and gets curvilinear appearance. The shape of the cross-section is parallelogram like. The tool is made on brownish quartzitere.

SIDE SCRAPER:

The leaf shaped scrapers have a mid rib running through the entire length and both the sides of the mid rib sloped downward with flat surface. There are traces of secondary small flakings. The dorsal surface is flat but have small flakings which are mostly confined to the cutting edges the anterior portion is thick and blunt The posterior portion is bevelled, broad and rounded. The cross-section is triangular. The tool is made on quartzitic phyllite moderately thick [3.7cm] flake and the length and breadth are 10.6cm and 8.1cm respectively.

The artefact assemblage of Totopara is a mixed one having hand axe and chopper scraper. The technique of manufacturing of the chopper is quite distinct of found in the subcontinent and even the style of manufacturing and morphometric characteristics of the hand axe are also different. This artefact assemblage may have broad similarity with the lower palaelithic assemblages of the south west upland Bengal. But a closer scrutiny reveals morphometric and technological differences between the North and South West Bengal assemblages. The eco-zones of the two areas are also quite different–one is in the Duars region of the foothills of lesser Himalayas of the Bhutan-India border and other one is at the upland Bengal of the pane plain region of the Chhotanagpur plateau extension. The raw material used are also quite different.

The most important aspect of this lower palaeolithic of North Bengal is that it is situated middle India and North east India. It can be broadly said that it belongs to the route of migration from Africa–Arab–India to the East, The artefact assemblage of Totopara, in fact, is situated on the way of migration of the Homo erectus/Archaic Homo sapiens from Africa to the East Aisa.

It is utmost important to mention that North Bengal especially the region of the western Duars has not been systematically explored for the relics of prehistoric culture. The present discovery is largely due to chance factor. However, Cornivus has already demonstrated how richful prehistoric treasure is there in Nepal and made a fundamental contribution in the study of prehistory of South Asia.

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A STUDY ON NUTRITIONAL STATUS AMONG 6 TO 12 YEARS SEMI-URBAN BENGALEE BOYS OF WEST BENGAL.

Jyoti Ratan Ghosh and Arup Ratan Bandyopadhyay

Abstract: There are few studies regarding the nutritional Status of the semi-urban Bangalee boys of 24 Parganas (N), West Bengal, India. The aim of the present study was to understand the nutritional status of the semi-urban Bengalee boys of 24 Parganas (N), West Bengal, India and to provide more comprehensive and representative data with regard to nutritional status. The present cross-sectional study includes 100 semi-urban Bengalee boys aged 6 – 12 years and the anthropometric variables includes height (HT), weight (WT) and with body mass index (BMI). The overall prevalence of stunting was 6% and the overall prevalence of thinness and overweight was 30.36% and 8.93% respectively. The NHANES-I reference data may be inadequate for the proper evaluation of nutritional status of the studied population because of the difference in ethnic origin and socio-economic condition.

INTRODUCTION

Each year, 26 million babies are born too small to lead healthy lives, because there mother were either ill or malnourished. More than 230 million (43%) of all preschool children in the developing world are stunted in there growth because of malnutrition caused by lack of food and by disease. Today it is expected that malnutrition will kill about seven million children a year, either directly or by worsening the impact of infectious disease. At the same time, 150 million adults are overweight of whom 15 million will die prematurely because of disease resulting from obesity. In some communities almost all causes of adult diabetes and 40% of cases of coronary heart disease are attributable to body weight in excess of optimum.

Anthropometry is the single most universally applicable, inexpensive, and non-invasive methods available to assess the size, proportion, and composition of the human body. Moreover, since growth in children and body dimensions at all ages reflect the overall health and welfare of individuals and populations, anthropometry may also be used to predict performance, health and survival. In the nutrition field, low height and/or weight relative to reference data have been used as classic indicators of under nutrition for individuals and group; similarly, elevated body weight and thickness of subcutaneous far have become common indicators of over nutrition or obesity.

In India adiposity is a serious problem and is gradually taking the form of epidemic specially in urban population, on the other hand thinness, stunting and lightness are taking the form of epidemic in rural population. Little is known about the nutritional status of semi-urban Bengalee boys of 24 parganas (N), West Bengal, India. One possible reason for this gap in knowledge is the lack of an internationally agreed on method for assessing nutritional status.

SUBJECTS AND METHODS

The present cross sectional study was undertaken in the District of 24 Parganas (N) of West Bengal, India. The study was carried out between March 2003 and May 2003.

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Anthropometric measurements were done on semi urban Bengali boys aged between 6 and 12 years. The information regarding the age was confirmed from school register and related individuals were excluded from the study.

A total of 100 randomly selected healthy boys of schools were taken for the present study. Data regarding anthropometry and other bio-social information were also collected in a specially prepared pre-tested schedule. All anthropometric measurements were done by using standard techniques (Lohman *et al.* 1988). All measurements were taken between 12.00 noon and 03.00 p.m.

Data were recorded on specially designed pre-tested schedule as mentioned earlier and managed in a Microsoft excel spreadsheet. All entries were double-checked for any possible error. Descriptive statistics for anthropometric variables were utilised to understand the variation. In addition to the measurements obtained directly, total adiposity index i.e. Body Mass Index (BMI) was computed using the standard equation (Chumiea *et al.* 1986) :

$$BMI = \text{Weight (kg)} / \text{Height } (m^2)$$

RESULTS

The socioeconomic and demographic characteristic of the study sample are presented in Table 1. Occupations of the fathers were diverse. About 25% of fathers were in service and about 26% were in business. The remaining 49% worked as a manual worker and in transport or as labors. On the other hand only 2% mothers were engaged in service and business respectively about 29% mothers were in manual worker. The remaining 67% mothers were housewife.

TABLE -1

Selected characteristics of the study population.

Variable	Frequency %
Occupation of father	
Service	25
Business	26
Manual worker & other	49
Occupation of mother	
Service	2
Business	2
Manual worker & other	29
Housewife	67
Number of sibllings	
None	44
1	36
≥2	20

About 44% of the subjects belong to the family where number of offspring was one, about 36% of the sample belongs to the family where number of offspring was two and about

20% subjects belongs to the family where number of offspring was more than two. The subjects were mostly middle-class Hindu Bengalee who belongs to different castes group.

TABLE -2

Mean and standard deviation of the anthropometric variables and BMI by age.

AGE(Y)	N*	Height(cm)	Weight(kgs)	BMI
6	13	119.22	22.31	15.56
		(6.8)	(5.06)	2.41)
7	16	122.77	22.88	15.09
		(6.19)	(4.57)	(2.2)
8	15	126.13	25.5	15.92
		(5.65)	(5.82)	(2.94)
9	10	131.48	27.4	15.64
		(9.43)	(9.2)	(3.73)
10	20	135.48	29.85	16.09
		(7.9)	(7.62)	(2.67)
11	18	136.58	28.94	15.45
		(4.45)	(4.58)	(1.75)
12	8	139.31	31.25	16.1
		(6.44)	(3.56)	(1.52)

n* = 100

Number in the parenthesis indicates Standard Deviation.

The mean and standard deviation of the anthropometric variables (HT & WT) and BMI by age are presented in Table 2. The table revealed that there is a positive trend of age related increase in case of height and weight but BMI does not show any consistency in its increment with age.

TABLE- 3

Prevalence of stunting.

Age (Y)	Height cm	<-2z scores' %
6	119.22±6.8*	0
7	122.77±6.19	6.25
8	126.13±5.65	6.25
9	131.48±9.43	0
10	135.48±7.9	5
11	136.58±4.45	5.56
12	139.31±6.44	25
All ages (n=100)	—	6

[1]With use of the first National Health and Nutrition Examination Survey (NHANES-1) in the United States of America.

* x±SD.

The prevalence of stunting is shown in Table 3. The overall prevalence of stunting was 6% with the use of <-2z scores of NHANES – 1 reference. The highest prevalence of stunting was found at the age of 12 where as no prevalence of stunting were found at the age of 6 and 9 years.

The prevalence of thinness and overweight with the use of 5th and 85th percentile respectively of the NHANES-1 reference data as cutoffs are shown in the Table 4. The overall prevalence of thinness was 30.36% and overweight was 8.93%.

TABLE- 4

Prevalence of thinness and overweight.

Age (y)	BMI (kg/m^2)	<5th percentile[1] (%)	≥85th percentile[1] (%)
9	15.64±3.73*	16.8	5.6
10	16.09±2.67	11.2	8.4
11	15.45±1.75	21.78	3.11
12	16.1±1.52	21	0
All ages (n=56)	_	30.36	8.93

[1]With use of the first National Health and Nutrition Examination Survey (NHANES-1) in the United States of America.

* x±SD.

The highest prevalence of thinness was found in the age of 11 years where as the highest prevalence of overweight was found in the age of 10 years and there was no prevalence of overweight at the age of 12 years.

DISCUSSION

The results of the present study are in general agreement with earlier studies (Onis *et al.* 2001; Reddy *et al.* 2000; Chatterjee *et al.* 1991; Agarwal *et al.* 1992; Pathemanathan *et al.* 1994) on the relationship of HT, WT and increased age. BMI also increased with age but devoid of significant effect on age, this is might be due to the fact that BMI is a measure of overall adiposity and the accumulation of fat is lower in earlier age group. Although many studies have been conducted on the anthropometric assessment of nutritional status in preschool children, much less such information can be found about older children and adolescents specially among the semi urban Bengalee boys of 24 Parganas (N), West Bengal, India. Among the most important reasons for this lack of information is the difficulty of interoperating arithropometric data in these age groups. The result showed that with the use of < - 2 z scores of the height for age NHANES-1 reference; the overall prevalence of stunting in the semi urban Bengalee boys was 6%. When we compared the BMI for age of the semi urban Bengalee boys with the 5th percentile of the NHANES-1 reference data, the overall prevalence of thinness of the semi urban Bengalee boys was 30.36% and comparison with 85th percentile of the NHANES-1 reference data showed the overall prevalence of overweight was 8.93%. The result also revealed that the overall prevalence of thinness (30.36%) was about 4 times that of stunting (7.14%, 9-12 years), not shown in the table.

The NHANES-1 reference data may be inadequate for the proper evaluation of nutritional status of the studied population because of the difference in ethnic origin and socio-economic condition.

Assessing nutritional status in pre-adolescents and adolescents periods continues to be a challenge. To take this problem, there is a need for studies of the pre-adolescent and adolescent growth and maturation characteristics of well nourished populations from different ethnic backgrounds conducted with use of a common protocol. So the present study stimulates more number of population investigations in this issue, required to provide precise understanding.

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CALCUTTA : A HARBOUR OF COMMUNITIES

Sumita Chaudhuri

Abstract : In the contet of industrialization and urbanizatıon of a developing nation like India, the inter-regional migratıon has an important role. It is expected that the migrants would bring with them their own socio-cultural tradition, world-view and behaviour pattern and naturally the socio-cultural implications of migration in the process of urbanization can be an interesting aspect of inquiry. One of the India's largest urban centre, Calcutta receives a large number of migrants from wıthin and also from outside the country. In this paper an attempt has been made to discuss the ıssues came up from thıs diversıfied social situatıon.

Migration plays a very crucial role in the process of urbanization. The role of migration in the context of social change and economic development has been noted by a number of scholars who have observed that large scale migration, whether between nations or among different social and ecological zones of a single nation, have played an important role in social change. Even though we have a number of studies on migration in the urban context, there are only a few studies critically examining the social issue related to migration. It is expected that the migrants would bring with them their own socio-cultural tradition, worldview and behaviour pattern and naturally the socio-cultural implications of migration in the process of urbanization can be an interesting aspect of inquiry.

In the process of industrialization and urbanization of a developing nation like India, the inter-regional migration has important contributions to make. It may serve to some extent the development needs of the nation by ensuring the use of human resources to the best advantage. Hussain (1969) has noted that the most important factor responsible for the equalization of economic opportunities as well as the social and cultural integration and increase in productivity is inter-regional population movement. It was reported that freedom of movement without hindrance to any part of the country was an important factor in developing national homogeneity in the United States.

India, one of the largest multi-ethnic societies in the world, is a new nation where the vast majority of people live their entire life in the vicinity of their place of birth. Yet, particularly since Independence from British rule in 1947, there has been an increase in the number of people moving within the subcontinent and as a result in India's major cities, there has been increased interaction between people from different cultural, linguistic, religious and caste background. In the Indian context, even in the pre-colonial and pre-industrial period, urban centers emerged and the phenomenon and migration from various linguistics and cultural regions in India to the urban centres, forming into sub-cultural groups can be traced (Nair: 1978). It has been observed that many regional linguistic groups have maintained the traditional norms and customs in the urban context too. The situation of migrants to Calcutta city in the mid-1950s is well described in the report of sample survey carried out on behalf of the University of Calcutta by Prof. S.N. Sen. This survey classified the population of Calcutta into three groups; resident, migrants from other Indian States and refugees from East Pakistan now Bangladesh. In 'Cultural Profile of Calcutta' (Sinha: 1972), the multidisciplinary scholars tried to explain that inspite of partial social isolation between the Bengalees and Non-Bengalee residents and thereby bring some of variations in the standard colloquial Bengalee.

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The city's proverbial tolerance for diversity is indicated by the existence of over 50 endogamous castes like groups among the Moslems of Calcutta. Siddique in his study on some minorities in Calcutta observed that large and decisive bulk of the communities and their respective segments have continued to be concentrated along specific occupations, suggesting occupational specialization on linguistic lines within the bounds of the city of Calcutta (1990).

Lubell observed that Calcutta receives two kinds of migrant streams: seasonal migrants from rural areas in the off-peak periods of the annual agricultural cycle and more or less permanent migrants who settle in the metropolitan area with or without their families. The permanent migrants include two broad groups: those who have traditionally come in search of jobs or of the other positive attributes of the big city and emigrants from East Pakistan now Bangladesh during the quarter of a century or so of its existence. The "traditional" migrants usually come without their families. Consequently, they differ from Calcutta's residents of longer standing in that they comprise a much higher proportion of persons of working age and show a much lower female to male ratio (Lubell: 1974). The ethnic composition of Calcutta, being an important aspect of the city's urbanization drew the attention of Bose (1964). In "The Ethnic Composition of Calcutta and the Residential Pattern of Minorities " (Biswas ,Chaubey and Chatterjee. 1986;2), the residential pattern of ethnic minorities in the generally Bengali-Hindu dominated city on the basis of 1961 census data was examined.

The four mega cities of India, namely Bombay, Calcutta, Delhi and Madras contained a population of more than five million each in the year 1991. Nearly one fourth of the population living in class I towns, one sixth of India's urban population and 4.4% of the country's total population is concentrated in these four mega cities. It is not only these demographic aspects in which these mega cities dominate, but also the concentration of economic, social, and cultural activities in them which significantly contributes to their emergence as powerful centres.

Historically the city of Calcutta has grown as a tiny English settlement. At the end of the first decade of the 18th Century, the future city of Calcutta was a small settlement of some 10 thousands inhabitants. Certain changes in the composition of Calcutta's population were inevitable as the place changed from a group of hamlets into a urban centre, then into a trade cum administrative centre as establishment of East India Company and subsequently of British Empire and gradually becoming a modern metropolis to megapolis with a population of over 10 million. One of the Calcutta's most striking characteristics is it's fantastic over crowding. Calcutta is still the major urban centre of a vast region including not only rural West Bengal but the whole of Eastern and North-Eastern India.

TABLE-I

Area and Total Population of Calcutta Urban Agglomeration 1981-1991

Urban	Area (in sq. km.)		Population	
Agglomeration of Calcutta				
	1981	1991	1981	1991
Total	852.23	897.02	91,94,018	1,09,16,272
Rural				
Urban	852.23	897.02	91,94,018	1,09,16,272

Source: Census of India, 1981,1991

TABLE-2

Decadal Growth of Urban Population: Calcutta (UA) [in million]

Year	1921	1931	1941	1951	1961	1971	1981	1991
Population (in million)	1.89	2.14	3.62	4.67	5.98	7.42	9.19	10.9

Source: Census of India 1921-1991

One of the India's largest urban centre, Calcutta is not only a great port but also an increasingly diversified manufacturing centre. It is also the cultural capital of the Bengali-speaking people of Eastern India. It's diverse population embraces skilled Sikh workers from Punjab, businessmen from Rajasthan and Gujarat on the Western part of India, highly educated Civil service professionals from Kerala and Madras in the South and Hindi speaking and Oriya speaking labourers from neighbouring states of Bihar, U.P. and Orissa; the population also includes local Bengalee Muslims as well as the dominant Bengalee Hindu population which is expected a relatively uniform and widespread distribution in most parts of the city. The Hindus are less concentrated in most of the wards of the Central Calcutta. This parts of the city form a contiguous non-Hindu track. The Christian and the Muslim belts of Calcutta particularly those in the central parts of the city present a picture of convergence, coincidence and coexistence to a considerable degree, the historical events associated with the growth of a particular religious community and its identity with a particular trade, as well as the relative status or economic affluence resulting from the trade may play a major role in explaining such aberrations in the line of the general theory of inter-religious mixture. Calcutta is thus the scene of a major confrontation between the enduring institutions of old India-her caste, communities and diversities of ethnic heritage and the pressures and values arising from the process of urbanization that presages India's industrial revolution. It has often been said that Calcutta is the centre of a "Population implosion " because of its engulfing types of immigrants from the adjoining countries and states.

TABLE 3

Migrant Flow in Calcutta City

Year	Migrant	Non-migrant
1921	45.9	54.1
1931	40.9	59.1
1941	42.3	57.7
1951	56.2	43.8
1961	52.9	47.1
1971	45.1	54.9
1981	31.3	68.7
1991	27.8	72.2

Source: Census of India-1921 -1991

The first growth of Calcutta is partly due to large-scale migration from different areas. Besides Bangladesh and rural West Bengal, people came here from different states of India.

Two types of migration may be observed in the context of Calcutta, one is the seasonal migration and the other is the migration of persons seeking to settle here for longer periods. In the context of seasonal migration, an appreciable number of Calcutta's urban poor, who are again mostly the unskilled labourers generally go back to the native villages in the month of December at the time of harvest and again come back to the city in early February. The seasonal migration, no doubt, reinforces traditional relationships as they maintain regular contact with their native places. (Chaudhur. S :1987)

There is marked difference in the reasons for migration between the two sexes. Thus the males migrated for employment reasons while the females mainly migrated as the family moved or due to marriage. The same pattern is noted both in the case of migrants from within and outside the state. It may not be out of context to mention here that persons also migrated to Calcutta from other countries in Asia, countries in Europe, Africa, America and Oceania. But the maximum number of migrants came from neighbouring countries like Nepal, Pakistan, Bhutan, Burma & particularly from Bangladesh.

Various communities living in Calcutta have more or less built up separate residential concentrations of their own. For example, the Malayalese who have come from Kerala of South India are mostly concentrated the southern part of the city like Behala, Rashbehari Avenue, Deshapriya Park etc. The Oriyas, who have come from Orissa are mainly concentrated in the central part of the city and also Khidirpore Dock Areas, Gardenrich etc. in closer proximity to Bengali and Hindi speaking Hindus. The Rajasthanis commonly known as Marwaris are mostly concentrated in Burrabazar Areas where the main wholesales market is located, while the more affluent section are found in the southern part of the city. The local dominant Hindu populations are mainly concentrated in the northern part of the city like Shyambazar, Shobhabazar, Hatibagan etc. Some of the heritage buildings owned by the different aristocrat Hindu Zamindar (Landlord) families have been found in these localities.

TABLE 4

Religious Composition in Calcutta Urban Agglomeration

Religious Group	Year			
	1961	1971	1981	1991
Hindu	83.4	82.0	84.6	84.1
Muslim	12.9	15.3	13.3	14.8
Christian	1.8	1.4	0.7	0.5
Sikh	0.5	0.5	0.3	0.2
Others	1.4	0.8	1.1	0.3

Source: Census of India 1961, 1971, 1981, 1991.

In Calcutta, communities with varied religion have lived and various socio-political changes no doubt have influenced the composition historically. A number of religious festivals are performed by the local people of Calcutta in spite of the fact that most of the migrant groups have their own religious places and also participate in many of the local religious festivals. The same is also true in case of other religious festivals performed by the Non-Hindu communities. All the religious groups have their own places of worship

where they get the opportunity to interact with members of their own religion and through the performance of their specific religious festivals maintain their own identity while at least marginal participation in the major festivals of other communities is also not uncommon.

Religion, language and geographical background of migrants play a very crucial role in the choice of residence in Calcutta for most of the communities. It has been noted that the larger communities, by and large, are concentrated in certain areas in Calcutta and thus, the spatial distribution sometimes reflects the socio-cultural background and distinctiveness. Even in the case of the smaller communities, it has been noted that they also prefer to live in clusters in some specific areas where they may not be predominant. It has also been noted that the social hierarchy- the caste background and even the dialects within the same religious-linguistic group are also not ignored and find expression in spatial enclaves of exclusive nature.

TABLE 5

Language Composition in Calcutta

Languages	Year		
	1981	1971	1961
1. Languages of the state in which the city is located	61.6	60.8	65.6
2. Languages of the neighbouring states	0.6	1.4	2.5
3. National Language Hindi	23.4	23.7	19.9
4. Urdu	12.1	11.2	9.2
5. Others	2.3	2.9	3.0
TOTAL	100.00	100.00	100.00

Source: Census of India 1961, 1971, 1981

N.B. Data on language composition is not yet published in 1991

Language is an important factor and many of the migrant communities have their own educational institutions, libraries, papers and magazines in their own languages. There are even clubs, welfare organisations of different migrant communities mainly looking after the interest of the respective communities. In fact, sometimes the so-called geopolitical boundaries become less important and the cultural boundaries become more meaningful.

It must be admitted that the cultural pluralism has persisted in the city of Calcutta to a great extent, which perhaps has helped in maintaining cultural differences and identities. Why is it that at the moment of crisis, people seek the support from someone belonging to their own caste, community, religion or region? Perhaps the limited economic opportunities may be one of the most important factors in seeking the support of one's own social group or community at the time of crisis or need. This no doubt, reinforce the traditional ties and help in maintaining distinct social identities instead of dissolving the regional, linguistic or religious identities even in a mega-city like Calcutta.

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AN ANTHROPOMETRIC AND HAEMATOLOGICAL STUDY OF PULMONARY TUGERCULOSIS PATINERS FROM SLUMS OF DELHI

Aruna Bhattacharya and Gautam K. Kshatriya

Abstract : A variety of anthropometric measurements were taken on sample of 152 pulmonary tuberculosis (TB) patients (90 males, 62 females) from eight slum clusters of Western Delhi, who were freshly diagnosed for TB and were yet to begin the anti tuberculosis treatment. These data were compared to sample of seventy individual (27 males and 43 females) from the same area, who had not suffered from any illness during last one year (from the date of data collection) and had never suffered from TB.

TB patients showed lower values for haemoglobin (Hb) when compared with non-TB group; for both males and females, Hb value fell below normal ranges. BMI for TB group fell below normal at less than 18.5 Similar trends were shown fro skin fold measurements (at bicep and subscapular area) and Circumferences (at mid arm and calf). Analyses of all these variables show statistically significant relationship with exception in Hb status between females of two groups as well as between two groups with both sexes taken together.

INTORDUCTION

The term "tuberculosis" is used primarily to signify an infections disease of the lungs caused by *Mycobaterium tuberculosis* (M.tb) However, many other organs may be involved. M. tb is the single most important infectious agent causing illness, disability and death worldwide. (Comstock and O'Brien 1994) *M.tb* is estimated to be present in more than a third of all human beings, but most do not develop disease because of their resistance and the healthy environment since the conversion from latent infection to active illness in an individual is dependent on both person's immunity and the concentration of *M.tb* in the environment.

GLOBAL SCENARIO

According to 5th annual report on global TB control, there were an estimated 8.4 million new tuberculosis causes in 1998. up from 8.0 million in 1997 (WHO report, 2001) If the present trend continues, 10.2 million new cases are expected in 2005. It is said that in developing countries in general Incidence rate for TB is around 135 persons per lakh population.

INDIAN SCENARIO

The true prevalence of tuberculosis in India is not known. In 1955-58.The prevalence of sputum positive tuberculosis, for those above 5 years of age, ranged from 229 to 813 per 100 000. (WHO/GOI, 1992, ICMR, 1959). The prevalence is estimated to be approximately 467 per 100 000 nationally (NFHS 1994) with areas of high endemic in certain rural areas and urban slums. It is estimated that about a third of the total tuberculosis cases of India are located in urban areas: metropolitan cities and their suburbs and towns risk factors for

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urban tuberculosis infection like malnutrition, overcrowding, Ill ventilated houses, cramped and poorly ventilated work place and stress are highly correlated to the living conditions of the urban poor. Social and behavioural factors like homelessness, drug abuse, and alcoholism are risk factors both for the disease occurrence and for non-compliance of diagnosed patients with tuberculosis chemotherapy. (Rossi-Espagnet, et al. 1991)

According to the national Family Health Survey (NFHS-2) the overall prevalence of TB in the country is 544 persons per 100,000 populations. The male to female ratio in total prevalence is 59:41, i.e. for every 60 male TB patients there are 40 female patients. In other words, at least 40 percent of all TB cases in the country are women. Higher TB notification rates in men may party be the reflection of epidemiological difference-differences in exposure, risk of infection and progression from infection to disease. Approximately two million new cases of tuberculosis (TB) are being reported every year from all over India. One in every four TB patient in the world is and India (WHO, 2000).

According to latest report from GOI, (GOI, 2001), India accounts for nearly 1/3rd of the global TB burden. Every year there are approximately 22 lakh new cases in the country of which approximately 10 lakh are new smear positive highly infectious cases. One person dies from TB in India every minute, more than 1,000 people every day, 5,00,000 every year.

Even though, a national TB control programme (NTCP) has been operational since 1962, and more recently, a Revised National Tuberculosis Control Programme (RNTCP) based on the application of the Directly Observed Treatment Short Course Chemotherapy (DOTS) as per the World Health Organization (WHO) recommendation was initiated in 1993; the situation of TB in India still has long way to go. Today, India had the second largest DOTS Programme in the World. (EANTB, 2002)

In Delhi, the TB menace is still beyond control as, at any given point of time there are 12,500 TB patients taking DOTS (Directly Observed Treatment, Short course Chemotherapy) treatment and annually approximately 25,000 patients take treatment (Vashist, 2002, personal communication). In Delhi, pilot phase started in 1996 and by the year 200 whole Delhi was covered under DOTS with the help of 14 main chest clinics and 38 DOTS centres (where a patient registered with DOTS comes on prescribed days to take his/her medicine to be consumed under direct observation of the Health Visitor of the centre, these centres also act as diagnostic centres for sputum microscope) under these Chest clinics (which are alternately called as Satellite centres). One DOTS centre caters to one lakh population, which further means that number of DOTS centres under a particular Chest Clinic may vary depending upon the population of the area. Among these 138 DOTS centres only 115 are equipped for laboratory diagnosis and treatment while, 23 remaining are meant only for providing treatment to the patients registered with DOTS. DOTS centres are manned by one Health Visitor and one laboratory technician, whereas medical practitioners are positioned only at Chest clinics, where facilities like X-ray etc. are available.

METHODOLOGY

Study population

A community based field-work was undertaken with the objective to study the environmental factors affecting the occurrence, transmission and treatment of pulmonary tuberculosis in urban slums of Delhi. Cases with symptoms suggestive for TB were screened through

household survey. These symptomatics were further advised to visit nearest DOTS centres where they were subjected to diagnostics tests for TB. In this process minimum of three days were needed to start the treatment in case in anthropocentric measurements were collected from cases who were freshly diagnosed for TB (this was done to limit the changes brought about by the ATT drugs and altered food habits of the patient during treatment) after obtaining oral consent in presence of authorised medical personnel in the health centres attached to the slum clusters chosen for the study.

For the non-TB group, care was taken to include individuals from the households of TB cases only in order to have all the socio-economic and outtural factors uniform coress the two groups, information about previous morbidity record was sought and only those were considered who had never suffered from TB and has no illness what so ever for last one year from the date of data collection.

152 TB patients (90 males, 62 females) and 70 healthy individuals forming non-TB group (27 males and 43 females) who had no history of TB ever in their life and any other illness for last one year were considered for the study.

Area selection

Slums of the capital are clasified into six categories, (Birdi, 1995) are:

i. Legally notified slum areas
ii. Jhuggi-jhompri clusters
iii. Unauthorised colonies
iv. Urban villages
v. Harijan bastis
vi. Pavements, roads

According to one of the docoments issued from Delhi Development Authority (DDA) slum wing (DDA, 1991), 88.5% people in the state of Delhi live in the urban agglomerate and unfortunately, a majority of this population lives in sub-standard conditions in areas which have features similar to slums and just about 40% live on pavements, in squatter areas (*Jhuggi-jhompri* clusters), and resettlement colonies.

Eight slum slusters were considered from west zone of Delhi (as shown in figure) since this zone claims maximum number of TB cases. (TB India, 2001) Ram Krishna Mission TB Centre (RKMTC) was choses as the main TB centre from this zone because of the centre's long standing involvement in the field of TB Eight slums were choses randomly, which were catered by seven DOTS centres of RKMTC.

Following stums were choses for the study:

1. Baba Farid Puri
2. Bapa Nagar
3. Bhil Basti
4. Indrapuri
5. Katputli Colony
6. Punjabi Colony
7. Rajasthan Colony
8. Tank Road

Body measurements

The anthropometric measurements were taken according to the standard techniques described by Cameron (1984), Bhasin (1989) using standard instruments like anthropometric rod, Holtain's skinfold calliper, non-stretchable tape and weighing machine. Before taking measurements errors were adusted and observations were noted carefully to minimies the human error. BMI data was compared with standard reference for analysis (NFHS-2, 2000)

Haemoglobin level

Blood samples were collected using disposable needles and syringes and samples were stored in sterile containers to avoid contaminations. For haemoglobin assessment haemoglobin meter was used following Sahil's method (Chaddha, 1977). Hb data was compared with standard references for analysis (CDC, 1998).

Result

Table 1 lists the comparison in terms of mean and standard deviation (SD) of the samples and significance of the difference between TB patients (males and females) and normal subject.

Haemoglobin analysis shows little difference between the groups with makes and females of both groups falling below the normal range. In females there is a little difference between the groups at 10.33 g/dI and 10.41 g/dI for TB and non-TB group respectively which was statistically non-significant. Similarly. difference of the groups was also found to be statistically non-significant.

BMI, which is an important measure of body composition, indicates difference between the two groups. In the present study, both males and females of the TB group not only scored below the other group but also they scored below the normal range (McLaren, D. S 1991) showing a state of malnutrition in both the sexes. The non-TB group on the other hand, remained well within the normal range at 21.68 and 21.59 for males and females respectively. Differences between the sexes and in total between two groups were statistically significant.

Skin fold measurements indicates subcutaneous fat distribution in the body. Skin fold at bicep show a striking difference between the two groups, mean of non-TB group is almost double of TB group. Though not much difference between sexes within the group was seen & which further establishes that TB affects body composition with depletion of subculaneous fat level in the body. Differences between the sexes and in total between two groups were statistically significant.

Skin fold at sub scapula showed similar difference as found in skin fold at bicep. But the differences are not so pronounced like skin fold at bicep with means 17.75 and 18.03 for TB and non-TB groups respectively. Differences between the sexes and in total between two groups were statistically significant.

Circumference at mid arm is an important measurement of body composition and nutritional status. It is indicated in the present study that differences exist between the two groups which is more pronounced between females of the comparing groups. The difference in means between females of both the groups shows difference of almost 3.6 cm as compared to 2.64 cm in males. Differences between the sexes and in total between two groups were statistically significant.

Circumference at calf, a different trend is observed than in circumference at mid arm. Here, difference of mean value between females is less as compared to males when compared between the groups. Differences between the sexes and in total between two gropus were statistically significant.

The trend observed in the present study is as under:

Haemoglobin :	In males, difference is pronounced as compared to females between two groups.
Body Mass index:	The onset of TB affects both the sexes.
Skin fold at Bicep:	Difference is pronounced in males as compared to females between two groups.
Skin fold at sub-scapula:	Difference is pronounced in males as compared to females between two groups.
Circumference at mid-arm:	Difference is pronounced in females as compared to males between two groups.
Circumference at calf:	Difference is pronounced in males as compared to females between tow groups.

Discussion

The results indicate that TB patient had lower values for all the variables considered for the present study. Not only lower values but also TB group fell below the normal range for Hb and BMI. This trend suggests that the disease have association with overall body composition.

Anaemia is characterised by a low level of haemoglobin (Hb) in the blood that is necessary for transporting oxygen from lungs to other tissues and organs of the body. Anaemia usually results from some nutritient deficiencices like iron, foliate and vitamin B_{12}. Iron deficiency is the most widespread form of malnutrition in the world, affecting more than two billion people (Stolzfus and Dreyiuss, 1998), In India, approximately 50% of the population are affected by (Seshadri, 1998) Nation wide survey of NFHS-2 reveals 52% of women in India have some degree of anaemia. About 35% of women are mildly anaemic, 15% are moderately anaemic and 2% are severely anaemic, Anaemia decreases steadily with increase in the level of educational attainment, and with increase in the standard of living index (NF HS-2, 2000). Three levels of seventy or anaemia are distinguished: mild anaemia [(10.0-10.9) g/dl for pregnant women and (10.0-11.9) g/dl for non-pregnant women], moderate anaemia (7.0-9.89 g/dl), and severe anaemia (less than 7.0 g/dl) (CDC, 1998).

Haematological and iron related alterations in active pulmonary tuberculosis have been well documented. Lee (1983) associated anaemia occurring in chronic disorders like tuberculosis due to the disturbance of iron metabolism. The funding was supported by a more recent study among Saudi patients, where TB patients from hospitals (30 males and 20 females) were assessed twice at pre-treatment and post treatment phases to study the iron metabolism during pulmonary tuberculosis (al-Omar and Oluboyede, 2002). In the present study, Hb content among TB patients shows a dismal state. The difference of means between two groups was statistically non-significant, which could be attributed to the fact that there was little difference in the mean values and hence this particular variable can

very well be neglected for establishing any association for its probable affect on TB. But, among males the difference was statistically significant when compared between the groups whereas among females the difference was non-significant.

The popular designation of tuberculosis as consumption reflects the catabolic response to infection (Serwaadda, *et al.*, 1985). The weight and height data were used to calculate Body Mass Index (BMI) which is an indicator of nutritional status, which can be used to assess both thinness and obesity. In India, mean BMI for women is 20.3. Chronic energy deficiency is usually indicated by a BMI less than 18.5. More than one-third (36%) of women have BMI below 18.5, indicating a high prevalence of nutritional deficiency. Nutritional problems are particularly serious for rural women, illiterate women, schedule-caste and schedule-tribe women, working women who are not self-employed and women who live in households with a low standard of living (NFHS-2, 2000)

The existence of a relationship between physique, or body constitution, and disease has long been recognized (Tanner, 1856). In particular, pulmonary tuberculosis (TB) is know to be associated with a physique characterized by a low weight for height and most commonly described as "linear" or "ectomorphic" (Love, 1929; Read and Love, 1933; Long and jablon 1955; Berry and Nash 1955; Palmar, Jobion and Edwards 1957; Sidhu and Sodhi 1975, Cameron and Scheepers, 1986). Present study among slum dwellers of Delhi reflects similar trend in body composition measured by BMI.

The temporal relationship between nutrition and infection has long been appreciated and there are many historical reflections to the concurrence of pestilence and famine. (Keusch and Schrimshaw, 1986) For long time, it has been observed that a variety of situations involving food deprivation are associated with increase in tuberculosis case and death rates, (Dubos and Dubos, 1952, Lowell, *et al.* 1969, Stairwelts, *et al*, 1949) Since the common factor in these situations is malnutrition, it is likely that the association is one of cause and effect. And since morbidity increases shortly after food shortages appear and decreases promptly when food supplies become adequate, it is likely that the effect of malnutrition is mediated primarily through a concomitant risk of disease among persons already infected. Body fat was found to be an indicator for susceptibility to TB in studies among Navy recruits (Edwards *et al.* 1971) and in the follow up studies in the Muscigee country (Comstock, 1875). Though these studies do not conclusively answer the questions about diet and tuberculosis. Although it is possible that under-nutrition causes both leanness and susceptibility to tuberculosis, it is also possible that some other aspect of body build, such as hormonal or genetic factors, is the underlying cause of both. Two findings that favour the latter hypothesis are the Impression that very few people in Muscigee Country in 1946 could have been considered to be seriously undernourished and the observation among Navy recruit that tuberculosis contacts weighed less than men who had not lived in the same house with a tuberculosis case, even when the comparison was limited to tuberculin-negative persons in each group (Edwards et al. 1971). In the present study, from the analyses of skin fold measurements and circumferences, it was seen that TB is associated with depletion of subcutaneous fat in the body.

CONCLUSION

From the present study among the sium dwellers of Delhi it is seen that, body composition in terms of subcutaneous fat, and BMI are associated with TB which in turn associates

nutritional level for susceptibility to TB. BMI may be a useful indicator for TB. In additional Hb content reflecting various degree of anemic condition for nutritional deficiencies of Iron. folate and vitamins may also be one of the likely candidates for indicating susceptibility For TB in conducive environment and body temperament.

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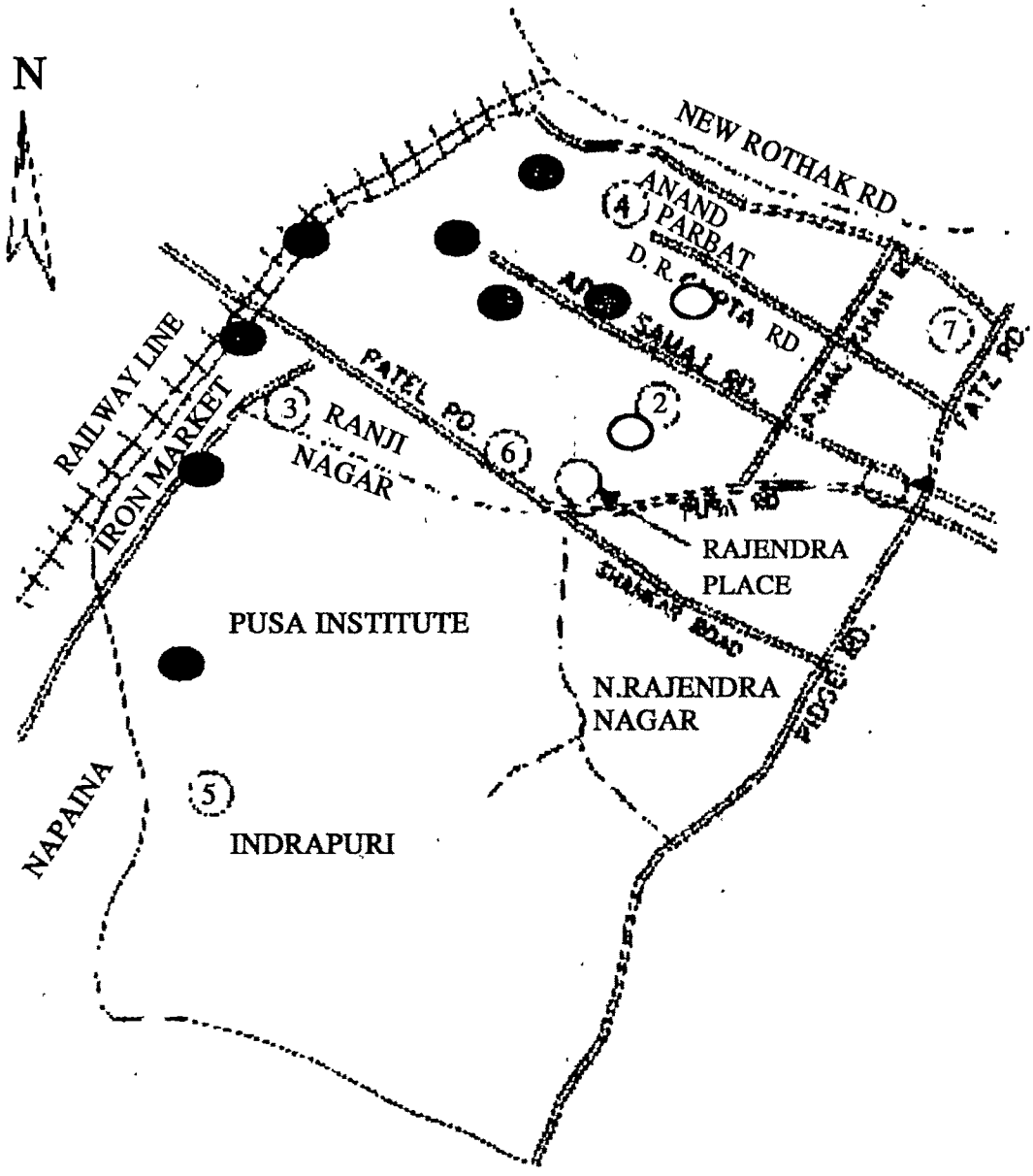
Table I Haemoglobin and Anthropometric Measurements in males and femals of TB and non TB groups

Haematometric Parameter	Sex (number)	TB patients Mean±SD	Sex (number)	Non-TB patients	Significance
Haemoglobin	Male (90)	11.7 ±1.87	Male (27)	13.07±1.74	p<0.05
(g/dl)	Female (62)	10.33±1.33	Female (43)	10.41±1.71	p<0.05
	Total (152)	11.18 ± 1.81	Total (70)	11.43±2.15	p<0.05
Anthropometric Parameter	Sex (number)	TB patients Mean±SD	Sex (number)	Non-TB patients Mead ± SD	Significance
Body Mass	Male (90)	17.2 ±2.36	Male (27)	21.68 ± 3.28	p<0.05
Index (BMI)	Female (62)	18.18±3.38	Female (43)	21.59 ± 4.18	p<0.05
	Total (152)	17.6 ± 2.85	Total (70)	21.62± 3.38	p<0.05
Skin fold	Male (90)	6.53 ±2.57	Male (27)	13.68 ± 3.02	p<0.05
thickness	Female (62)	6.57 ± 3.17	Female (43)	11.13 ± 2.67	p<0.05
at Bicep (mm)	Total (152)	6.55 ± 2.82	Total (70)	12.12 ± 2.68	p<0.05
Skin fold	Male (90)	12.72 ± 4.92	Male (27)	18.54 ± 4.67	p<0.05
thickness at sub	Female (62)	12.8 ± 4.65	Female (43)	17.17 ± 4.64	p<0.05
scapula (mm)	Total (152)	17.75 ± 4.79	Total (70)	18.03 ± 4.53	p<0.05
Circumference	Male (90)	21.3 ±2.77	Male (27)	23.94 ± 2.95	p<0.05
of mid-arm	Female (62)	19.89 ±3.38	Female (43)	23.5 ± 3.03	p<0.05
(cm)	Total (152)	20.73 ± 3.1	Total (70)	23.67 ± 2.99	p<0.05
Circumference	Male (90)	28.32 ±2.76	Male (27)	32.96 ± 2.87	p<0.05
at calf (cm)	Female (62)	27.01 ±2.66	Female (43)	29.87 ± 3.39	p<0.05
	Total (152)	27.78 ±2.79	Total (70)	31.06 ± 3.52	p<0.05



N. B. : Black circles mark the slum clusters and numbered circles are DOTS centres of the area

SOME OBSERVATIONS ON URBANIZATION IN NORTH EAST INDIA

Dr. Bela Bhattacharya

Abstract : Rapid urbanization becomes an important characteristic generally in developing countries particularly in India. The phenomenon has reached a new dimension in case of North East India which has been considered a unique ecozone. The decennial growth rate during last few decades are much interesting. In fact North-East-India reveals quite higher percentage of growth rate than national level. In this paper a brief analysis on urbanization in this region is delineated.

North-East India consisting of eight states, i.e. Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura has a total area of 2,62,191 sq. km and a population of 3,90,35,582 according to 2001 census. There are total 67 Districts and 202 Towns with a total urban population of 60,32,083 as per 2001 census. The share of urban population to the total population of North-East India is 15.45 percent. The corresponding figure of urban population in all India level is 27.78 percent. Therefore urban population of the macro-region is 12.33 percentage points less than the national level (Table 1).

This is due to the fact that the hills and mountains cover about 60 percent of the total area of this region. Most of the urban people live in valleys. More than 56 percent of the urban population live in Assam and only 1 percent in Sikkim. However percentage of urban population in 1991 was 13.93 percent against 25.72 percent all-India level. The discrepancy between the region and nation was 11.79 percentage points in 1991. The corresponding figure was 11.05 percentage points in 1981. The decennial growth rate during 1981, 1991 and 2001 are interesting as North-East-India reveals higher percentage of growth rate than national level. During 1981-91 decennial growth rate in North-East-India was 48.47 percentage which was 11.36 percentage points higher than all-India level. Similarly during 1991-2001 the growth rate was 37.29 percent against the national level, 30.73 percent. Therefore, decennial growth rate was 6.56 percentage points more in North-East-India (Table 2).

Out of 8 states of North-East-India only one state, Assam alone has 56.20 percent of the tatal urban population of the region. All other states have less than 10 percent each of the total urban population of the respective state. Table 3 reveals that urban population of Manipur share 9.46 percent, Tripura 9.0 percent, Nagaland 5.85 percent, Arunachal Pradesh 3.7 percent and Sikkim only a little more than one percent. In Arunachal Pradesh out of 9 districts 5 districts have no urban area.

The share of urban population to total population varies from one state to other. The highest level of urbanization is found in Mizoram where about 50 percentage of the total population live in 22 towns of three districts. The highest growth rate was recorded in 1981. The decennial growth rate was as high as 221.6 percent during 1981-91. It appears that further scope of urbanization has been limited since the last decade of the twentieth century (Table 4).

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Before 1971 there was no urban area in Arunachal Pradesh. In 1971 census estimated urban population was only 3.7 percent. In 1991 census the state was include in the category of less urbanized states of India. But the position has been changing and level of urbanization was 20.41 percentage against the aggregate figure of 15.75 percentage for the entire North-East-India. However the state has been recorded 7.37 percentage points less than national level. Except Mizoram all the states of North-East-India have less share of urban population to total population in comparison to all-India level i.e. 27.78 percent. In terms of urbanization the position of Sikkim is in the lowest rank having 11.1 percent. The decennial growth rate during 1981-91 and 1991-2001 are less for all the states except Meghalaya (36.36% during 1981-91 and 37.14% during 1991-2001) and Sikkim (–27.40% during 1981-91 and 62.15% during 1991-2001).

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Table 1 : Percentage of Urban Population to Total Population

	1981	1991	2001	Discrepancy between North East & All India		
North East India	11.81	13.93	15.45	1981	1991	2001
India	23.31	25.37	27.78	–11.50	–11.79	–12.33

Table 2 : Decennial growth rate of Urban Population

	1981 - 1991	1991 - 2001	Discrepancy between North East & All India	
North East India	48.47	37.29	1981 - 1991	1991 - 2001
India	37.11	30.73	11.36	6.56

Table 3 : Urban centers & percentage of urban population in different States of North East India

State	District	Urban area	Urban (Town)	Sex ratio Population	Percentage (2001)
Arunachal Pradesh	11	9	222688	849.70	3.69
Assam	23	93	3389416	878.00	56.2
Manipur	8	31	570410	993.50	9.46
Meghalaya	7	12	452612	984.80	7.5
Mizoram	3	22	441040	951.00	7.31
Naga Land	7	9	352821	809.00	5.85
Sikkim	4	8	60005	827.70	1.01
Tripura	4	18	543094	961.70	9.0
Total	**67**	**202**	**6032083**	**904.20**	**100**

Table 4 : Urban Population and decennial growth rate

State	Urban Population			Share of Urban Population to total Population			Decennial growth rate		
	1981	1991	2001	1981	1991	2001	1981	1991	2001
Arunachal Pradesh	41428	104806	222688	6.56	12.21	20.41	139.63	152.98	101.29
Assam	1782376	2470888	3389413	8.82	11.08	12.72	—	38.63	36.24
Manipur	375460	505848	570410	26.42	27.69	23.88	165.36	34.73	12.81
Meghalaya	241333	329079	452612	18.07	18.69	19.63	63.98	36.36	37.14
Mizoram	121814	317040	441040	24.67	46.20	49.50	222.61	160.27	38.72
Naga Land	120234	210095	352821	15.52	17.28	17.84	133.95	74.74	69.44
Sikkim	51084	36984	60005	16.15	9.12	11.10	159.73	-27.73	62.15
Tripura	225568	418983	543094	10.99	15.26	17.00	38.93	85.75	28.78
Total	**2959297**	**4393723**	**6032083**	**11.81**	**13.93**	**15.45**	**75.61**	**48.47**	**37.29**

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